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- BRINKMANN, JON. See YANNY, BRIAN, et al. A Low-Latitude Halo Stream around the Milky Way.
- BRITTAIN, SEAN D. CO Emission from Disks around AB Aurigae and HD 141569: Implications for Disk Structure and Planet Formation Timescales. Sean D. Brittain, Terrence W. Rettig, Theodore Simon, Craig Kulesa, Michael A. DiSanti, & Neil Dello Russo. 588, 535 (2003)
- Broadhurst, Tom. See Blakeslee, John P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- BROCATO, E. The Distance to the Large Magellanic Cloud Cluster NGC 1866 and the Surrounding Field. M. Salaris, S. Percival, E. Brocato, G. Raimondo, & A. R. Walker. 588, 801 (2003)
- BROMAGE, B. J. I. SOHO-Ulysses Spring 2000 Quadrature: Coronal Diagnostic Spectrometer and SUMER Results. S. Parenti, E. Landi, & B. J. I. Bromage. 590, 519 (2003)
- BROOS, P. S. See MUNO, M. P., et al. A Deep Chandra Catalog of X-Ray Point Sources toward the Galactic Center.
- BROWN, EDWARD F. On Variations in the Peak Luminosity of Type Ia Supernovae. F. X. Timmes, Edward F. Brown, & J. W. Truran. 590, L83 (2003)
- BRUMMELL, NICHOLAS H. On the Formation of Magnetic Structures by the Combined Action of Velocity Shear and Magnetic Boynancy. Kelly S. Cline, Nicholas H. Brummell, & Fausto Cattaneo. 588, 630 (2003)
- BRUNTHALER, A. The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348. A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
- BULIK, TOMASZ. Constraints on the Binary Evolution from Chirp Mass Measurements. Tomasz Bulik & Krzysztof Belczy'nski. 589, L37 (2003)
- BUONANNO, ROBERTO. Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)
- BURDERI, L. Coupling between Periodic and Aperiodic Variability in SAX J1808.4—3658. M. T. Menna, L. Burderi, L. Stella, N. Robba, & M. van der Klis. 589, 503 (2003)

A Search for Pulsars in Quiescent Soft X-Ray Transients. I. M. Burgay, L. Burderi, A. Possenti, N. D'Amico, R. N. Manchester, A. G. Lyne, F. Camilo, & S. Campana. 589, 902 (2003)

BURGAY, M. A Search for Pulsars in Quiescent Soft X-Ray Transients. I. M. Burgay, L. Burderi, A. Possenti, N. D'Amico, R. N. Manchester, A. G.

Lyne, F. Camilo, & S. Campana. 589, 902 (2003)

BURGESS, C. Large Mixing Angle Oscillations as a Probe of the Deep Solar Interior. C. Burgess, N. S. Dzhalilov, M. Maltoni, T. I. Rashba, V. B. Semikoz, M. A. Tórtola, & J. W. F. Valle. 588, L65 (2003)

BURKEPILE, J. T. Constraints on Coronal Mass Ejection Dynamics from M. J. Reiner, Simultaneous Radio and White-Light Observations. A. Vourlidas, O. C. St. Cyr, J. T. Burkepile, R. A. Howard, M. L. Kaiser, N. P. Prestage, & J.-L. Bougeret. 590, 533 (2003)

BURLAGA, L. F. Solar Wind Speed and Temperature outside 10 AU and the Termination Shock. Y. C. Whang, L. F. Burlaga, Y.-M. Wang, & N. R.

Sheeley, Jr. 589, 635 (2003)

Evolution of Magnetic Fields in Corotating Interaction Regions from 1 to 95 AU: Order to Chaos. L. F. Burlaga, C. Wang, J. D. Richardson, &

N. F. Ness. 590, 554 (2003)

- BURROWS, A. On the Indirect Detection of Sodium in the Atmosphere of the Planetary Companion to HD 209458. J. J. Fortney, D. Sudarsky, I. Hubeny, C. S. Cooper, W. B. Hubbard, A. Burrows, & J. I. Lunine. 589,
- BURROWS, ADAM. Theoretical Spectra and Atmospheres of Extrasolar Giant Planets. David Sudarsky, Adam Burrows, & Ivan Hubeny. 588, 1121
- BUSARELLO, G. Age, Metallicity, and Star Formation History of Cluster Galaxies at $z \sim 0.3$. P. Merluzzi, F. La Barbera, M. Massarotti, G. Busarello, & M. Capaccioli. 589, 147 (2003)
- BUTLER, R. PAUL. A Sub-Saturn Mass Planet Orbiting HD 3651. Debra A. Fischer, R. Paul Butler, Geoffrey W. Marcy, Steven S. Vogt, & Gregory W. Henry. 590, 1081 (2003)
- BYUN, Do-Young. The Distance to the Supernova Remnant CTB 87 and the Radial Velocity of the Perseus Arm toward $l = 75^{\circ}$, Derived from H I and CO Observations. Roland Kothes, Wolfgang Reich, Tyler Foster, & Do-Young Byun. 588, 852 (2003)
- CABRIT, S. Warm Molecular Hydrogen and Ionized Neon in the HH 2 Outflow. Bertrand LeFloch, J. Cernicharo, S. Cabrit, A. Noriega-Crespo, A. Moro-Martin, & D. Cesarsky. 590, L41 (2003)
- CALDWELL, NELSON. New Low-Mass Members of the Taurus Star-forming Region. K. L. Luhman, Cesar Briceno, John R. Stauffer, Lee Hartmann, D. Barrado y Navascues, & Nelson Caldwell. 590, 348 (2003)
- CAMILO, F. The Complex Ha Line Profile of the Bright Companion to PSR J1740-5340 in NGC 6397. E. Sabbi, R. Gratton, F. R. Ferraro, A. Bragaglia, A. Possenti, N. D'Amico, & F. Camilo. 589, L41 (2003)
 - A Search for Pulsars in Quiescent Soft X-Ray Transients. I. M. Burgay, L. Burderi, A. Possenti, N. D'Amico, R. N. Manchester, A. G. Lyne, F. Camilo, & S. Campana. 589, 902 (2003)
- CAMPANA, S. The Resolved Fraction of the Cosmic X-Ray Background. A. Moretti, S. Campana, D. Lazzati, & G. Tagliaferri. 588, 696 (2003)
- A Search for Pulsars in Quiescent Soft X-Ray Transients. I. M. Burgay, L. Burderi, A. Possenti, N. D'Amico, R. N. Manchester, A. G. Lyne, F. Camilo, & S. Campana. 589, 902 (2003)
- See ISRAEL, G. L., et al. The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849-400910.
- CANTÓ, JORGE. See TRINIDAD, MIGUEL A., et al. Observations of Water Masers and Radio Continuum Emission in AFGL 2591.
- CAO, W. D. Weak Infrared Molecular Lines Reveal Rapid Outflow in Cool Magnetic Sunspot Penumbral Fibrils. M. J. Penn, W. D. Cao, S. R. Walton, G. A. Chapman, & W. Livingston. 590, L119 (2003)
- CAO, Y. The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebev, M. Fich, R. Taylor, Y. Cao, & T. Hancock, 590, 906 (2003)
- CAPACCIOLI, M. Age, Metallicity, and Star Formation History of Cluster Galaxies at $z \sim 0.3$. P. Merluzzi, F. La Barbera, M. Massarotti, G. Busarello, & M. Capaccioli. 589, 147 (2003)
- CARDIEL, N. Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González. 590, L91 (2003)
- CAREY, SEAN J. The G11.11-0.12 Infrared-dark Cloud: Anomalous Dust and a Nonmagnetic Isothermal Model. Doug Johnstone, Jason D. Fiege, R. O. Redman, P. A. Feldman, & Sean J. Carey. 588, L37 (2003)

- CARILLI, C. L. Variability of Submillijansky Radio Sources. C. L. Carilli, R. J. Ivison, & D. A. Frail. 590, 192 (2003)
- CARLSSON, M. Nonequilibrium CO Chemistry in the Solar Atmosphere. A. Asensio Ramos, J. Trujillo Bueno, M. Carlsson, & J. Cernicharo. 588, L61 (2003)
- CARNEY, BRUCE W. Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)
- CARR, JOHN S. Gas in the Terrestrial Planet Region of Disks: CO Fundamental Emission from T Tauri Stars. Joan Najita, John S. Carr, & Robert D. Mathieu. 589, 931 (2003)
- CASARES, J. Bowen Flourescence from the Companion Star in X1822-371. J. Casares, D. Steeghs, R. I. Hynes, P. A. Charles, & K. O'Brien. 590, 1041
- CASSEN, PATRICK M. The Thermal Regulation of Gravitational Instabilities in Protoplanetary Disks. Brian K. Pickett, Annie C. Mejía, Richard H. Durisen, Patrick M. Cassen, Donald K. Berry, & Robert P. Link. 590,
- CASSISI, SANTI. The Initial Helium Content of Galactic Globular Cluster Stars from the R-Parameter: Comparison with the Cosmic Microwave Background Constraint. Santi Cassisi, Maurizio Salaris, & Alan W. Irwin. 588, 862 (2003)
- See MEREGHETTI, S., et al. Integral and XMM-Newton CASTRO-TIRADO, A. Observations of the Weak Gamma-Ray Burst GRB 030227.
- CATTANEO, FAUSTO. On the Formation of Magnetic Structures by the Combined Action of Velocity Shear and Magnetic Boynancy. Kelly S. Cline, Nicholas H. Brummell, & Fausto Cattaneo. 588, 630 (2003)
 - On the Interaction between Convection and Magnetic Fields. Cattaneo, Thierry Emonet, & Nigel Weiss. 588, 1183 (2003)
- CAUZZI, G. Solar and Heliospheric Observatory/Coronal Diagnostic Spectrograph and Ground-based Observations of a Two-Ribbon Flare: Spatially Resolved Signatures of Chromospheric Evaporation. L. Teriaca, A. Falchi, G. Cauzzi, R. Falciani, L. A. Smaldone, & V. Andretta. 588, 596 (2003)
- CAYREL, ROGER. See BARBUY, BEATRIZ, et al. Oxygen Abundance in the Template Halo Giant HD 122563.
- CENARRO, J. Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González. 590, L91 (2003)
- CERNICHARO, J. Nonequilibrium CO Chemistry in the Solar Atmosphere. A. Asensio Ramos, J. Trujillo Bueno, M. Carlsson, & J. Cernicharo. 588, L61 (2003)
- Warm Molecular Hydrogen and Ionized Neon in the HH 2 Outflow. Bertrand LeFloch, J. Cernicharo, S. Cabrit, A. Noriega-Crespo, A. Moro-Martin, & D. Cesarsky. 590, L41 (2003)
- CESARSKY, D. Warm Molecular Hydrogen and Ionized Neon in the HH 2 Outflow. Bertrand LeFloch, J. Cernicharo, S. Cabrit, A. Noriega-Crespo, A. Moro-Martin, & D. Cesarsky. 590, L41 (2003)
- CHAKRABARTY, D. A Major Soft Gamma Repeater-like Outburst and Rotation Glitch in the No-longer-so-anomalous X-Ray Pulsar 1E 2259+586. V. M. Kaspi, F. P. Gavriil, P. M. Woods, J. B. Jensen, M. S. E. Roberts, & D. Chakrabarty. 588, L93 (2003)
- CHAKRABARTY, DEEPTO. Eddington-limited X-Ray Bursts as Distance Indicators. I. Systematic Trends and Spherical Symmetry in Bursts from 4U 1728-34. Duncan K. Galloway, Dimitrios Psaltis, Deepto Chakrabarty, & Michael P. Muno. 590, 999 (2003)
- CHAPLIN, W. J. A Comparison of Low-Degree Solar p-Mode Parameters from BiSON and GONG: Underlying Values and Temporal Variations. R. Howe, W. J. Chaplin, Y. P. Elsworth, F. Hill, R. Komm, G. R. Isaak, & R. New. 588, 1204 (2003)
- CHAPMAN, G. A. Weak Infrared Molecular Lines Reveal Rapid Outflow in Cool Magnetic Sunspot Penumbral Fibrils. M. J. Penn, W. D. Cao, S. R. Walton, G. A. Chapman, & W. Livingston. 590, L119 (2003)
- CHAPMAN, GARY A. The Contribution of Faculae and Network to Long-Term Changes in the Total Solar Irradiance. Stephan R. Walton, Dora G. Preminger, & Gary A. Chapman. 590, 1088 (2003)
- CHAPMAN, S. C. The Bivariate Luminosity-Color Distribution of IRAS Galaxies and Implications for the High-Redshift Universe. Chapman, G. Helou, G. F. Lewis, & D. A. Dale. 588, 186 (2003)
- CHARLES, P. A. Bowen Flourescence from the Companion Star in X1822-371. J. Casares, D. Steeghs, R. I. Hynes, P. A. Charles, & K. O'Brien. 590, 1041 (2003)

- CHARLTON, JANE C. High-Resolution STIS/Hubble Space Telescope and HIRES/Keck Spectra of Three Weak Mg II Absorbers toward PG 1643+706. Jane C. Charlton, Jie Ding, Stephanie G. Zonak, Christopher W. Churchill, Nicholas A. Bond, & Jane R. Rigby. 589, 111 (2003)
 - The Multiphase Absorption Systems toward PG 1206+459. Jie Ding, Jane C. Charlton, Christopher W. Churchill, & Christopher Palma. 590, 746 (2003)
- CHARTAS, G. Chandra Observations of QSO 2237+0305. X. Dai, G. Chartas, E. Agol, M. W. Bautz, & G. P. Garmire. 589, 100 (2003)
- CHAVUSHYAN, V. See STEPANIAN, J. A., et al. A Multiwavelength Study of Narrow-Line Seyfert 1 Galaxies from the Second Byurakan Survey.
- CHEN, C.-H. ROSIE. Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martín A. Guerrero, & Margarita Rosado. 590, 306 (2003)
- CHEN, M. L. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- CHENG, K. S. An Accretion Model for the Growth of the Central Black Hole Associated with Ionization Instability in Quasars. Y. Lu, K. S. Cheng, & S. N. Zhang. 590, 52 (2003)
- CHEVALIER, R. A. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- CHEVALIER, ROGER A. Wind-Interaction Models for the Early Afterglows of Gamma-Ray Bursts: The Case of GRB 021004. Zhi-Yun Li & Roger A. Chevalier. 589, L69 (2003)
- CHIANG, LUNG-YIH. Non-Gaussianity of the Derived Maps from the First-Year Wilkinson Microwave Anisotropy Probe Data. Lung-Yih Chiang, Pavel D. Naselsky, Oleg V. Verkhodanov, & Michael J. Way. 590, L65 (2003)
- CHIBA, MASASHI. Kinematics of Tidal Debris from ω Centauri's Progenitor Galaxy. Arihiro Mizutani, Masashi Chiba, & Tsuyoshi Sakamoto. 589, L89 (2003)
- See IYE, MASANORI, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim1.5$.
- CHO, JUNGYEON. Thermal Conduction in Magnetized Turbulent Gas. Jungyeon Cho, A. Lazarian, Albert Honein, Bernard Knaepen, Stavros Kassinos, & Parviz Moin. 589, L77 (2003)
- CHOE, G. S. Sympathetic Coronal Mass Ejections. Y.-J. Moon, G. S. Choe, Haimin Wang, & Y. D. Park. 588, 1176 (2003)
- CHRISTLIEB, NORBERT. Abundance Analysis of HE 2146—1247, a Star with Extremely Enhanced Neutron Capture Elements. Judith G. Cohen, Norbert Christlieb, Y.-Z. Qian, & G.J. Wasserburg, 588, 1082 (2003)
- CHU, YOU-HUA. Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martín A. Guerrero, & Margarita Rosado. 590, 306 (2003)
- CHURAZOV, E. XMM-Newton Observations of the Perseus Cluster. I. The Temperature and Surface Brightness Structure. E. Churazov, W. Forman, C. Jones, & H. Boehringer. 590, 225 (2003)
- CHURCHILL, CHRISTOPHER W. High-Resolution STIS/Hubble Space Telescope and HIRES/Keck Spectra of Three Weak Mg 11 Absorbers toward PG 1643+706. Jane C. Charlton, Jie Ding, Stephanie G. Zonak, Christopher W. Churchill, Nicholas A. Bond, & Jane R. Rigby. 589, 111 (2003)
 - The Multiphase Absorption Systems toward PG 1206+459. Jie Ding, Jane C. Charlton, Christopher W. Churchill, & Christopher Palma. 590, 746 (2003)
- CIARAVELLA, A. Ultraviolet Spectroscopy of Narrow Coronal Mass Ejections. D. Dobrzycka, J. C. Raymond, D. A. Biesecker, J. Li, & A. Ciaravella. 588, 586 (2003)
- CLAMPIN, MARK. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- CLAYTON, GEOFFREY C. Dust Grain Size Distributions from MRN to MEM. Geoffrey C. Clayton, Michael J. Wolff, Ulysses J. Sofia, K. D. Gordon, & K. A. Misselt. 588, 871 (2003)
- CLEMENS, DAN P. See KRAEMER, KATHLEEN E., et al. Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study.
- CLEMENS, J. C. High-Resolution Spectroscopy of the Pulsating White Dwarf G29-38. Susan E. Thompson, J. C. Clemens, M. H. van Kerkwijk, & D. Koester. 589, 921 (2003)

- CLEMENTINI, GISELLA. RR Lyrae and Short-Period Variable Stars in the Dwarf Irregular Galaxy NGC 6822. Gisella Clementini, Enrico V. Held, Lara Baldacci, & Luca Rizzi. 588, L85 (2003)
- CLINE, KELLY S. On the Formation of Magnetic Structures by the Combined Action of Velocity Shear and Magnetic Boynancy. Kelly S. Cline, Nicholas H. Brummell, & Fausto Cattaneo. 588, 630 (2003)
- CLINE, T. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- COHEN, JUDITH G. Abundance Analysis of HE 2146–1247, a Star with Extremely Enhanced Neutron Capture Elements. Judith G. Cohen, Norbert Christlieb, Y.-Z. Qian, & G.J. Wasserburg. 588, 1082 (2003)
- COHEN, M. H. Jet Collimation in Action: Realignment on Kiloparsec Scales in 3C 279. D. C. Homan, M. L. Lister, K. I. Kllermann, M. H. Cohen, E. Ros, J. A. Zensus, M. Kadler, & R. C. Vermeulen. 589, L9 (2003)
- COHN, H. N. A Chandra X-Ray Study of the Dense Globular Cluster Terzan 5.
 C. O. Heinke, P. D. Edmonds, J. E. Grindlay, D. A. Lloyd, H. N. Cohn, & P. M. Lugger. 590, 809 (2003)
- COLES, PETER. Universal Behavior of Phase Correlations in Nonlinear Gravitational Clustering. Peter Watts, Peter Coles, & Adrian Melott. 589, L61 (2003)
- COLLADOS, M. Magnetoacoustic Waves in Sunspots. E. V. Khomenko, M. Collados, & L. R. Bellot Rubio. 588, 606 (2003)
- COLLEY, WESLEY N. Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)
- COLLINS, NICHOLAS R. Emission-Line Galaxies in the STIS Parallel Survey. II. Star Formation Density. Harry I. Teplitz, Nicholas R. Collins, Jonathan P. Gardner, Robert S. Hill, & Jason Rhodes. 589, 704 (2003)
- COMBI, J. A. Discovery of a New Radio Galaxy within the Error Box of the Unidentified Gamma-Ray Source 3EG J1735-1500. J. A. Combi, G. E. Romero, J. M. Paredes, D. F. Torres, & M. Ribó. 588, 731 (2003)
- CONSTANTIN, A. Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)
- COOK, K. H. A Search for Stellar Obscuration Events Due to Dark Clouds. A. J. Drake & K. H. Cook. 589, 281 (2003)
- COOPER, C. S. On the Indirect Detection of Sodium in the Atmosphere of the Planetary Companion to HD 209458. J. J. Fortney, D. Sudarsky, I. Hubeny, C. S. Cooper, W. B. Hubbard, A. Burrows, & J. I. Lunine. 589, 615 (2003)
- COORAY, ASANTHA. Kuiper Belt Object Sizes and Distances from Occultation Observations. *Asantha Cooray*. 589, L97 (2003)
- The Far-Infrared Background Correlation with Cosmic Microwave Background Lensing. Yong-Seon Song, Asantha Cooray, Lloyd Knox, & Matias Zaldarriaga. 590, 664 (2003)
- CORDES, JAMES M. A New Search Technique for Short Orbital Period Binary Pulsars. Scott M. Ransom, James M. Cordes, & Stephen S. Eikenberry. 589, 911 (2003)
- COSTA, E. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- COTTIN, HERVÉ. Photodestruction of Relevant Interstellar Molecules in Ice Mixtures. Hervé Cottin, Marla H. Moore, & Yves Bénilan. 590, 874 (2003)
- COURVOISIER, T.J.-L. See MEREGHETTI, S., et al. *Integral* and *XMM-Newton* Observations of the Weak Gamma-Ray Burst GRB 030227.
- COVEY, K. See TEEGARDEN, B. J., et al. Discovery of a New Nearby Star. COVING. S. See ISRAEL, G. L., et al. The Infrared Counterpart to
- COVINO, S. See ISRAEL, G. L., et al. The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849—400910.
- COWIE, L. L. A Submillimeter and Radio Survey of Gamma-Ray Burst Host Galaxies: A Glimpse into the Future of Star Formation Studies. E. Berger, L. L. Cowie, S. R. Kulkarni, D. A. Frail, H. Aussel, & A. J. Barger. 588, 99 (2003)
- COYNE, D. G. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- CRAIG, I. J. D. Fast Magnetic Reconnection via Jets and Current Micro-Sheets. Paul Watson & I. J. D. Craig. 590, L57 (2003)
- CRAWFORD, FRONEFIELD. Radio Polarization of the Young High-Magnetic-Field Pulsar PSR J1119—6127. Fronefield Crawford & Nathan C. Keim. 590, 1020 (2003)
- CROSS, NICHOLAS. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.

- CRUZ-GONZÁLEZ, I. See STEPANIAN, J. A., et al. A Multiwavelength Study of Narrow-Line Seyfert 1 Galaxies from the Second Byurakan Survey.
- CURIEL, SALVADOR. See TRINIDAD, MIGUEL A., et al. Observations of Water Masers and Radio Continuum Emission in AFGL 2591.
- CUTLER, CURT. The Crustal Rigidity of a Neutron Star, and Implications for PSR 1828-11 and Other Precession Candidates. Curt Cutler, Greg Ushomirsky, & Bennett Link. 588, 975 (2003)
- CUTRI, ROC M. A Hubble Space Telescope/WFPC2 Snapshot Survey of 2MASS-selected Red QSOs. Andrew R. Marble, Dean C. Hines, Gary D. Schmidt, Paul S. Smith, Jason A. Surace, Lee Armus, Roc M. Cutri, & Brant O. Nelson. 590, 707 (2003)
- CZERNY, BOZENA. See BECHTOLD, JILL, et al. Chandra Survey of Radio-quiet, High-Redshift Quasars.
- DADDI, E. Detection of Strong Clustering of Red K-selected Galaxies at 2 < z_{phot} < 4 in the Hubble Deep Field–South. E. Daddi, H. J. A. Röttgering, I. Labbé, G. Rudnick, M. Franx, A. F. M. Moorwood, H. W. Rix, P. P. van der Werf, & P. G. van Dokkum. 588, 50 (2003)
- DAHLE, HÄKON. The Density Profile of Cluster-Scale Dark Matter Halos. Häkon Dahle, Steen Hannestad, & Jesper Sommer-Larsen. 588, L73 (2003)
- DAI, X. Chandra Observations of QSO 2237+0305. X. Dai, G. Chartas, E. Agol, M. W. Bautz, & G. P. Garmire. 589, 100 (2003)
- DALAL, NEAL. Bringing Closure to Microlensing Mass Measurement. Neal Dalal & Benjamin F. Lane. 589, 199 (2003)
- DALE, D. A. The Bivariate Luminosity-Color Distribution of IRAS Galaxies and Implications for the High-Redshift Universe. S. C. Chapman, G. Helou, G. F. Lewis, & D. A. Dale. 588, 186 (2003)
- DALE, DANIEL A. See LU, NANYAO, et al. Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features.
- D'ALESSIO, PAOLA. See TRINIDAD, MIGUEL A., et al. Observations of Water Masers and Radio Continuum Emission in AFGL 2591.
- DAMIANI, F. Chandra Observations of the Young Open Cluster NGC 2516. F. Damiani, E. Flaccomio, G. Micela, S. Sciortino, F.R. Harnden, Jr., S.S. Murray, S.J. Wolk, & R.D. Jeffries. 588, 1009 (2003)
- D'AMICO, N. The Complex Hα Line Profile of the Bright Companion to PSR J1740-5340 in NGC 6397. E. Sabbi, R. Gratton, F. R. Ferraro, A. Bragaglia, A. Possenti, N. D'Amico, & F. Camilo, 589, L41 (2003)
- A Search for Pulsars in Quiescent Soft X-Ray Transients. I. M. Burgay, L. Burderi, A. Possenti, N. D'Amico, R. N. Manchester, A. G. Lyne, F. Camilo, & S. Campana. 589, 902 (2003)
- DAMINELI, AUGUSTO. See BARBUY, BEATRIZ, et al. Oxygen Abundance in the Template Halo Giant HD 122563.
- DAS, TAPAS K. Role of Shocked Accretion Flows in Regulating the Quasi-Periodic Oscillation of Galactic Black Hole Candidates. Tapas K. Das. 588, L89 (2003)
- DAVID, LAURENCE P. Observed Non-Steady State Cooling and the Moderate Cluster Cooling Flow Model. Noam Soker & Laurence P. David. 589, 770 (2003)
- DAYAL, ADITYA. See KRAEMER, KATHLEEN E., et al. Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study.
- DEAN, A. J. BeppoSAX Average Spectra of Seyfert Galaxies. A. Malizia, L. Bassani, J. B. Stephen, G. Di Cocco, F. Fiore, & A. J. Dean. 589, L17 (2003)
- DE DIEGO, J. A. See STEPANIAN, J. A., et al. A Multiwavelength Study of Narrow-Line Seyfert 1 Galaxies from the Second Byurakan Survey.
- DEKEL, AVISHAI. Dark Halo Cusp: Asymptotic Convergence. Avishai Dekel, Itai Arad, Jonathan Devor, & Yuval Birnboim. 588, 680 (2003)
- DE KOOL, MARTUN. Contrasting the Ultraviolet and X-Ray O vi Column Density Inferred for the Outflow in NGC 5548. Nahum Arav, Jelle Kaastra, Katrien Steenbrugge, Bert Brinkman, Rick Edelson, Kirk T. Korista, & Martijn de Kool. 590, 174 (2003)
- DELAIN, KISHA M. See KURASZKIEWICZ, JOANNA K., et al. The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies.
- DELANEY, TRACEY. The First Measurement of Cassiopeia A's Forward Shock Expansion Rate. Tracey DeLaney & Lawrence Rudnick. 589, 818 (2003)
- DELLO RUSSO, NEIL. CO Emission from Disks around AB Aurigae and HD 141569: Implications for Disk Structure and Planet Formation Timescales. Sean D. Brittain, Terrence W. Rettig, Theodore Simon, Craig Kulesa, Michael A. DiSanti, & Neil Dello Russo. 588, 535 (2003)

- DELUCA, E. E. Constraints on Active Region Coronal Heating. S. K. Antiochos, J. T. Karpen, E. E. DeLuca, L. Golub, & P. Hamilton. 590, 547 (2003)
- DEN HARTOG, P. R. See MEREGHETTI, S., et al. Integral and XMM-Newton Observations of the Weak Gamma-Ray Burst GRB 030227.
- DENISSENKOV, PAVEL A. The Abundance Evolution of Oxygen, Sodium, and Magnesium in Extremely Metal-Poor Intermediate-Mass Stars: Implications for the Self-Pollution Scenario in Globular Clusters. Pavel A. Denissenkov & Falk Herwig. 590, L99 (2003)
- Dennis, Brian R. Rapid Acceleration of a Coronal Mass Ejection in the Low Corona and Implications for Propagation. *Peter T. Gallagher, Gareth R. Lawrence, & Brian R. Dennis.* 588, L53 (2003)
- DEPAGNE, ERIC. See BARBUY, BEATRIZ, et al. Oxygen Abundance in the Template Halo Giant HD 122563.
- DE PONTIEU, B. Correlations on Arcsecond Scales between Chromospheric and Transition Region Emission in Active Regions. B. De Pontieu, T. Tarbell, & R. Erdélyi. 590, 502 (2003)
- DEROSA, MARC L. Asterospheric Magnetic Fields and Winds of Cool Stars. Carolus J. Schrijver, Marc L. DeRosa, & Alan M. Title. 590, 493 (2003)
- DESAI, M. I. Evidence for a Suprathermal Seed Population of Heavy Ions Accelerated by Interplanetary Shocks near 1 AU. M. I. Desai, G. M. Mason, J. R. Dwyer, J. E. Mazur, R. E. Gold, S. M. Krimigis, C. W. Smith, & R. M. Skoug. 588, 1149 (2003)
- DEUTSCH, LYNNE K. See KRAEMER, KATHLEEN E., et al. Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study.
- DE VILLIERS, JEAN-PIERRE. A Numerical Method for General Relativistic Magnetohydrodynamics. Jean-Pierre De Villiers & John F. Hawley. 589, 458 (2003)
- DEVOR, JONATHAN. Dark Halo Cusp: Asymptotic Convergence. Avishai Dekel, Itai Arad, Jonathan Devor, & Yuval Birnboim. 588, 680 (2003)
- DEWARF, L. E. Intrinsic Properties of the Young Stellar Object SU Aurigae. L. E. DeWarf, J. F. Sepinsky, E. F. Guinan, I. Ribas, & I. Nadalin. 590, 357 (2003)
- DeZeeuw, Darren L. A Three-dimensional Flux Rope Model for Coronal Mass Ejections Based on a Loss of Equilibrium. Ilia I. Roussev, Terry G. Forbes, Tamas I. Gombosi, Igor V. Sokolov, Darren L. DeZeeuw, & Joachim Birn. 588, L45 (2003)
- DIAMOND, PHILIP J. See IMAI, HIROSHI, et al. The Three-dimensional Kinematics of Water Masers around the Semiregular Variable RT Virginis.
- DICKEL, J. R. Discovery of Radio/X-Ray/Optical Resolved Supernova Remnants in the Center of the Andromeda Galaxy. Albert Kong, L. O. Sjouwerman, B. F. Williams, M. R. Garcia, & J. R. Dickel. 590, L21 (2003)
- DI COCCO, G. BeppoSAX Average Spectra of Seyfert Galaxies. A. Malizia, L. Bassani, J. B. Stephen, G. Di Cocco, F. Fiore, & A. J. Dean. 589, L17 (2003)
- DIETRICH, M. Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)
- DINERSTEIN, HARRIET L. See LU, NANYAO, et al. Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features.
- DINESCU, DANA I. A Capture Scenario for Globular Cluster ω Centauri. Toshio Tsuchiya, Dana I. Dinescu, & Vladimir I. Korchagin. 589, L29 (2003)
- DING, JIE. High-Resolution STIS/Hubble Space Telescope and HIRES/Keck Spectra of Three Weak Mg II Absorbers toward PG 1643+706. Jane C. Charlton, Jie Ding, Stephanie G. Zonak, Christopher W. Churchill, Nicholas A. Bond, & Jane R. Rigby. 589, 111 (2003)
- The Multiphase Absorption Systems toward PG 1206+459. *Jie Ding, Jane C. Charlton, Christopher W. Churchill, & Christopher Palma.* 590, 746 (2003)
- DINGUS, B. L. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- DISANTI, MICHAEL A. CO Emission from Disks around AB Aurigae and HD 141569: Implications for Disk Structure and Planet Formation Timescales. Sean D. Brittain, Terrence W. Rettig, Theodore Simon, Craig Kulesa, Michael A. DiSanti, & Neil Dello Russo. 588, 535 (2003)
- DISTEFANO, R. A Luminous Recurrent Supersoft X-Ray Source in NGC 300. Albert Kong & R. DiStefano. 590, L13 (2003)
- DJORGOVSKI, S. G. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.

- DOBRZYCKA, D. Ultraviolet Spectroscopy of Narrow Coronal Mass Ejections. D. Dobrzycka, J. C. Raymond, D. A. Biesecker, J. Li, & A. Ciaravella. 588, 586 (2003)
- DOBRZYCKI, ADAM. See BECHTOLD, JILL, et al. Chandra Survey of Radio-quiet, High-Redshift Quasars.
- DOELEMAN, S. S. R Cassiopeiae: Relative Strengths of SiO Masers at 43 and 86 GHz. R. B. Phillips, A. H. Straughn, S. S. Doeleman, & C. J. Lonsdale. 588, L105 (2003)
- DOI, MAMORU. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
- DOLPHIN, A. The Cepheid Distance to NGC 5236 (M83) with the ESO Very Large Telescope. Frank Thim, G. A. Tammann, A. Saha, A. Dolphin, Allan Sandage, E. Tolstoy, & Lukas Labhardt. 590, 256 (2003)
- DONE, CHRIS. Simultaneous Chandra and Rossi X-Ray Timing Explorer Observations of the Nearby Bright Seyfert 2 Galaxy NGC 4945. Chris Done, Greg M. Madejski, Piotr T. Zycki, & Lincoln J. Greenhill. 588, 763 (2003)
- DORFAN, D. E. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- DORMAN, BEN. Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)
- DORON, R. Temperature Measurements in the Solar Transition Region Using N III Line Intensity Ratios. R. Doron, G. A. Doschek, J. M. Laming, U. Feldman, & A. K. Bhatia. 590, 1121 (2003)
- DOSCHEK, G. A. Temperature Measurements in the Solar Transition Region Using N III Line Intensity Ratios. R. Doron, G. A. Doschek, J. M. Laming, U. Feldman, & A. K. Bhatia. 590, 1121 (2003)
- DOUGADOS, CATHERINE. Hubble Space Telescope WFPC2 Imaging of the Disk and Jet of HV Tauri C. Karl R. Stapelfeldt, François Ménard, Alan M. Watson, John E. Krist, Catherine Dougados, Deborah L. Padgett, & Wolfgang Brandner. 589, 410 (2003)
- DRAGO, F. CHIUDERI. Solving the Descrepancy between the Extreme-Ultraviolet and Microwave Observations of the Quiet Sun. E. Landi & F. Chiuderi Drago. 589, 1054 (2003)
- DRAINE, B. T. Radiative Torques on Interstellar Grains. III. Dynamics with Thermal Relaxation. Joseph C. Weingartner & B. T. Draine. 589, 289 (2003)
- Drake, A. J. A Search for Stellar Obscuration Events Due to Dark Clouds. A. J. Drake & K. H. Cook. 589, 281 (2003)
- On the Selection of Photometric Planetary Transits. A. J. Drake. 589, 1020 (2003)
- DRÖGE, WOLFGANG. Solar Particle Transport in a Dynamical Quasi-linear Theory. Wolfgang Dröge. 589, 1027 (2003)
- DUCATI, JORGE R. A Method for Simultaneous Determination of A_V and R and Applications. Jorge R. Ducati, Daiana Ribeiro, & Sandro B. Rembold. 588, 344 (2003)
- DUCHÉNE, G. The First Detection of Spatially Resolved Mid-Infrared Scattered Light from a Protoplanetary Disk. C. McCabe, G. Duchêne, & A. M. Ghez. 588, L113 (2003)
- DUDEK, J. B. The Radio Spectrum of the Phenyl Radical. M. C. McCarthy, R. J. McMahon, C. A. Gottlieb, J. B. Dudek, J. F. Stanton, & P. Thaddeus. 590, L61 (2003)
- DULLEMOND, C. P. The First Detailed Look at a Brown Dwarf Disk. I. Pascucci, D. Apai, Th. Henning, & C. P. Dullemond. 590, L111 (2003) DULTZIN-HACYAN, D. See STEPANIAN, J. A., et al. A Multiwavelength Study of
- Narrow-Line Seyfert 1 Galaxies from the Second Byurakan Survey.

 DUNNE, BRYAN C. Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martín A.
- Guerrero, & Margarita Rosado. 590, 306 (2003)
 DUNNE, LORETTA. CO Molecular Gas in Infrared-luminous Galaxies. Lihong Yao, E. R. Seaquist, Nario Kuno, & Loretta Dunne. 588, 771 (2003)
- DURISEN, RICHARD H. The Thermal Regulation of Gravitational Instabilities in Protoplanetary Disks. Brian K. Pickett, Annie C. Mejia, Richard H. Durisen, Patrick M. Cassen, Donald K. Berry, & Robert P. Link. 590, 1060 (2003)
- DWYER, J. R. Evidence for a Suprathermal Seed Population of Heavy Ions Accelerated by Interplanetary Shocks near 1 AU. M. I. Desai, G. M. Mason, J. R. Dwyer, J. E. Mazur, R. E. Gold, S. M. Krimigis, C. W. Smith, & R. M. Skoug. 588, 1149 (2003)

- Dye, S. Semilinear Gravitational Lens Inversion. S. J. Warren & S. Dye. 590, 673 (2003)
- DZHALILOV, N. S. Large Mixing Angle Oscillations as a Probe of the Deep Solar Interior. C. Burgess, N. S. Dzhalilov, M. Maltoni, T. I. Rashba, V. B. Semikoz, M. A. Tórtola, & J. W. F. Valle. 588, L65 (2003)
- EBISAWA, KEN. Chandra Observations of a Nonthermal Supernova Remnant Candidate AX J1843.8-0352 and Its Surroundings. Masaru Ueno, Aya Bamba, Katsuji Koyama, & Ken Ebisawa. 588, 338 (2003)
- EDELSON, RICK. Contrasting the Ultraviolet and X-Ray O vi Column Density Inferred for the Outflow in NGC 5548. Nahum Arav, Jelle Kaastra, Katrien Steenbrugge, Bert Brinkman, Rick Edelson, Kirk T. Korista, & Martijn de Kool. 590, 174 (2003)
- EDGE, ALASTAIR C. Measuring σ₈ with Cluster Lensing: Biases from Unrelaxed Clusters. Graham P. Smith, Alastair C. Edge, Vincent R. Eke, Robert C. Nichol, Ian Smail, & Jean-Paul Kneib. 590, L79 (2003)
- EDMONDS, P. D. X-Ray Studies of Two Neutron Stars in 47 Tucanae: Toward Constraints on the Equation of State. C. O. Heinke, J. E. Grindlay, D. A. Lloyd, & P. D. Edmonds. 588, 452 (2003)
 - A Chandra X-Ray Study of the Dense Globular Cluster Terzan 5. C. O. Heinke, P. D. Edmonds, J. E. Grindlay, D. A. Lloyd, H. N. Cohn, & P. M. Lugger. 590, 809 (2003)
- EIKENBERRY, STEPHEN S. A New Search Technique for Short Orbital Period Binary Pulsars. Scott M. Ransom, James M. Cordes, & Stephen S. Eikenberry. 589, 911 (2003)
- EISNER, J. A. Near-Infrared Interferometric Measurements of Herbig Ae/Be Stars. J. A. Eisner, B. F. Lane, R. L. Akeson, L. A. Hillenbrand, & A. I. Sargent. 588, 360 (2003)
- EKE, VINCENT R. Simulations of Galaxy Formation in a ACDM Universe. III. The Dissipative Formation of an Elliptical Galaxy. Andrés Meza, Julio F. Navarro, Matthias Steinmetz, & Vincent R. Eke. 590, 619 (2003)
- Measuring σ₈ with Cluster Lensing: Biases from Unrelaxed Clusters. Graham P. Smith, Alastair C. Edge, Vincent R. Eke, Robert C. Nichol, Ian Smail, & Jean-Paul Kneib. 590, L79 (2003)
- ELITZUR, M. The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348. A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
- ELLINGSEN, S. P. See GREENHILL, L. J., et al. A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy.
- ELLISON, SARA L. The Absorption and Emission Kinematics in the z = 0.7450 Mg II Absorber toward Q1331+17. Sara L. Ellison, Gabriela Mallén-Ornelas, & Marcin Sawicki. 589, 709 (2003)
- ELLSWORTH, R. W. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- ELMEGREEN, BRUCE G. A Turbulent Origin for Flocculent Spiral Structure in Galaxies. Bruce G. Elmegreen, Debra Meloy Elmegreen, & Samuel N. Leitner. 590, 271 (2003)
- ELMEGREEN, DEBRA MELOY, A Turbulent Origin for Flocculent Spiral Structure in Galaxies. Bruce G. Elmegreen, Debra Meloy Elmegreen, & Samuel N. Leimer. 590, 271 (2003)
- ELSWORTH, Y. P. A Comparison of Low-Degree Solar p-Mode Parameters from BiSON and GONG: Underlying Values and Temporal Variations. R. Howe, W. J. Chaplin, Y. P. Elsworth, F. Hill, R. Komm, G. R. Isaak, & R. New: 588, 1204 (2003)
- ELVIS, M. See FABBIANO, G., et al. The X-Ray-faint Emission of the Supermassive Nuclear Black Hole of IC 1459.
- ELVIS, MARTIN. See BECHTOLD, JILL, et al. Chandra Survey of Radio-quiet, High-Redshift Quasars.
- ELVIS, MARTIN S. See KURASZKIEWICZ, JOANNA K., et al. The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies.
- EL-ZANT, AMR A. Galaxy Formation in Triaxial Halos: Black Hole–Bulge–Dark Halo Correlation. Amr A. El-Zant, Isaac Shlosman, Mitchell C. Begelman, & Juhan Frank. 590, 641 (2003)
- EMONET, THIERRY. On the Interaction between Convection and Magnetic Fields. Fausto Cattaneo, Thierry Emonet, & Nigel Weiss. 588, 1183 (2003)
- ENDEVE, EIRIK. Two-dimensional Magnetohydrodynamic Models of the Solar Corona: Mass Loss from the Streamer Belt. Eirik Endeve, Egil Leer, & Thomas E. Holzer. 589, 1040 (2003)
- ERACLEOUS, M. See SCHAEFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.

- Search for a Point-Source Counterpart of the Unidentified Gamma-Ray Source TeV J2032+4130 in Cygnus. R. Mukherjee, J. P. Halpern, E. V. Gotthelf, M. Eracleous, & N. Mirabal. 589, 487 (2003)
- ERDÉLYI, R. Correlations on Arcsecond Scales between Chromospheric and Transition Region Emission in Active Regions. B. De Pontieu, T. Tarbell, & R. Erdélyi. 590, 502 (2003)
- EVANS, C. J. A Tale of Two Stars: The Extreme O7 laf+ Supergiant AV 83 and the OC7.5 III(f) Star AV 69. D. John Hillier, T. Lanz, S. R. Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 588, 1039 (2003)
- EVANS, N. WYN. A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy. Jan T. Kleyna, Mark I. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 588, L21 (2003)
 - A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy: Erratum (ApJ, 588, L21 [2003]). Jan T. Kleyna, Mark I. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 589, L59 (2003) (Orig. paper in 588, L21 (2003))
- EVANS, NANCY REMAGE. Chandra Observations of Associates of η Carinae.

 1. Luminosities. Nancy Remage Evans, Frederick D. Seward, Miriam I. Krauss, Takashi Isobe, Joy Nichols, Eric M. Schlegel, & Scott J. Wolk. 589, 509 (2003)
- FABBIANO, G. The X-Ray-faint Emission of the Supermassive Nuclear Black Hole of IC 1459. G. Fabbiano, M. Elvis, S. Markoff, A. Siemiginowska, S. Pellegrini, A. Zezas, F. Nicastro, G. Trinchieri, & J. McDowell. 588, 175 (2003)
- FALCHI, A. Solar and Heliospheric Observatory/Coronal Diagnostic Spectrograph and Ground-based Observations of a Two-Ribbon Flare: Spatially Resolved Signatures of Chromospheric Evaporation. L. Teriaca, A. Falchi, G. Cauzzi, R. Falciani, L. A. Smaldone, & V. Andretta. 588, 596 (2003)
- FALCIANI, R. Solar and Heliospheric Observatory/Coronal Diagnostic Spectrograph and Ground-based Observations of a Two-Ribbon Flare: Spatially Resolved Signatures of Chromospheric Evaporation. L. Teriaca, A. Falchi, G. Cauzzi, R. Falciani, L. A. Smaldone, & V. Andretta. 588, 596 (2003)
- FALCKE, H. The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348. A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
- FALCKE, HEINO. Interferometric Detection of Linear Polarization from Sagittarius A* at 230 GHz. Geoffrey C. Bower, Melvyn C. H. Wright, Heino Falcke, & Donald C. Backer. 588, 331 (2003)
- FALCÓN-BARROSO, JESÚS. The Near-Infrared Ca II Triplet-σ Relation for Bulges of Spiral Galaxies. Jesús Falcón-Barroso, Reynier F. Peletier, Alexandre Vazdekis, & Marc Balcells. 588, L17 (2003)
- FALCONE, A. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito. A. Falcone, R. Atkins, W. Benbow, D. Berley, M. L. Chen, D. G. Coyne, B. L. Dingus, D. E. Dorfan, R. W. Ellsworth, L. Fleysher, R. Fleysher, G. Gisler, J. A. Goodman, T. J. Haines, C. M. Hoffman, S. Hugenberger, L. A. Kelley, I. Leonor, J. F. McCullough, J. E. McEnery, R. S. Miller, A. I. Mincer, M. F. Morales, P. Nemethy, J. M. Ryan, B. Shen, A. Shoup, G. Sinnis, A. J. Smith, G. W. Sullivan, T. Tumer, K. Wang, M. O. Wascko, S. Westerhoff, D. A. Williams, T. Yang, & G. B. Yodh, 588, 557 (2003)
- FAN, Y. The Emergence of a Twisted Magnetic Flux Tube into a Preexisting Coronal Arcade. Y. Fan & S. E. Gibson. 589, L105 (2003)
- FAZIO, G. G. See KRAEMER, KATHLEEN E., et al. Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study.
- FEDERMAN, S. R. Nonthermal Chemistry in Diffuse Clouds with Low Molecular Abundances. J. Zsargó & S. R. Federman. 589, 319 (2003)
- FEIGELSON, E. D. See Muno, M. P., et al. A Deep *Chandra* Catalog of X-Ray Point Sources toward the Galactic Center.
- FELDMAN, P. A. The G11.11—0.12 Infrared-dark Cloud: Anomalous Dust and a Nonmagnetic Isothermal Model. *Doug Johnstone, Jason D. Fiege, R. O. Redman, P. A. Feldman, & Sean J. Carey.* 588, L37 (2003)
- FELDMAN, P. D. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- FELDMAN, U. Temperature Measurements in the Solar Transition Region Using N III Line Intensity Ratios. R. Doron, G. A. Doschek, J. M. Laming, U. Feldman, & A. K. Bhatia. 590, 1121 (2003)
- FELLOWS, C. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.

- FENDER, ROB. Hard X-Ray Flares Preceding Soft X-Ray Outbursts in Aquila X-1: A Link between Neutron Star and Black Hole Transitions. Wenfei Yu, Marc Klein-Wolt, Rob Fender, & Michiel van der Klis. 589, L33 (2003)
- FERGUSON, HENRY C. Gravitational Lensing by Burkert Halos. Yousin Park & Henry C. Ferguson. 589, L65 (2003)
- FERRARA, ANDREA. The Detectability of the First Stars and Their Cluster Enrichment Signatures. Evan Scannapieco, Raffaella Schneider, & Andrea Ferrara. 589, 35 (2003)
- FERRARO, F. R. The Complex Hα Line Profile of the Bright Companion to PSR J1740-5340 in NGC 6397. E. Sabbi, R. Gratton, F. R. Ferraro, A. Bragaglia, A. Possenti, N. D'Amico, & F. Camilo. 589, L41 (2003)
- FERRARO, FRANCESCO R. Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)
- FERRIGNO, C. High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)
- FICH, M. The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebey, M. Fich, R. Taylor, Y. Cao, & T. Hancock. 590, 906 (2003)
- FIEGE, JASON D. The G11.11-0.12 Infrared-dark Cloud: Anomalous Dust and a Nonmagnetic Isothermal Model. *Doug Johnstone, Jason D. Fiege, R. O. Redman, P. A. Feldman, & Sean J. Carey.* 588, L37 (2003)
- Magnetic Structure of a Dark Bok Globule. Jacques P. Vallée, Jane S. Greaves, & Jason D. Fiege. 588, 910 (2003)
- FILIPPENKO, ALEXEI V. A Low-Mass Central Black Hole in the Bulgeless Seyfert 1 Galaxy NGC 4395. Alexei V. Filippenko & Luis C. Ho. 588, L13 (2003)
- FIORE, F. BeppoSAX Average Spectra of Seyfert Galaxies. A. Malizia, L. Bassani, J. B. Stephen, G. Di Cocco, F. Fiore, & A. J. Dean. 589, L17 (2003)
- FISCHER, DEBRA A. A Sub-Saturn Mass Planet Orbiting HD 3651. Debra A. Fischer, R. Paul Butler, Geoffrey W. Marcy, Steven S. Vogt, & Gregory W. Henry, 590, 1081 (2003)
- FLACCOMIO, E. Chandra Observations of the Young Open Cluster NGC 2516.
 F. Damiani, E. Flaccomio, G. Micela, S. Sciortino, F.R. Harnden, Jr., S.S. Murray, S.J. Wolk, & R.D. Jeffries. 588, 1009 (2003)
- FLEYSHER, L. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- FLEYSHER, R. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- FLINT, K. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- FORBES, TERRY G. Models of Three-dimensional Flux Ropes. *Joachim Birn*, Terry G. Forbes, & Karl Schindler. 588, 578 (2003)
- A Three-dimensional Flux Rope Model for Coronal Mass Ejections Based on a Loss of Equilibrium. *Ilia I. Roussev, Terry G. Forbes, Tamas I. Gombosi, Igor V. Sokolov, Darren L. DeZeeuw, & Joachim Birn.* 588, L45 (2003)
- FORD, HOLLAND C. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- FORMAN, W. XMM-Newton Observations of the Perseus Cluster. I. The Temperature and Surface Brightness Structure. E. Churazov, W. Forman, C. Jones, & H. Boehringer. 590, 225 (2003)
- FORMAN, W. R. See VIKHLININ, A., et al. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$.
- FORSTER, JAMES R. NGC 7538S—a High-Mass Protostar with a Massive Rotating Disk. Goeran Sandell, Melvyn Wright, & James R. Forster. 590, L45 (2003)
- FORTNEY, J. J. On the Indirect Detection of Sodium in the Atmosphere of the Planetary Companion to HD 209458. J. J. Fortney, D. Sudarsky, I. Hubeny, C. S. Cooper, W. B. Hubbard, A. Burrows, & J. I. Lunine. 589, 615 (2003)
- FORTNEY, JONATHAN J. Measuring the Oblateness and Rotation of Transiting Extrasolar Giant Planets. Jason W. Barnes & Jonathan J. Fortney. 588, 545 (2003)
- FOSTER, TYLER. The Distance to the Supernova Remnant CTB 87 and the Radial Velocity of the Perseus Arm toward $l = 75^{\circ}$. Derived from H I

- and CO Observations. Roland Kothes, Wolfgang Reich, Tyler Foster, & Do-Young Byun. 588, 852 (2003)
- FOURNIER, KEVIN B. The Fe XXII I(11.92 A)/I(11.77 A) Density Diagnostic Applied to the Chandra High-Energy Transmission Grating Spectrum of EX Hydrae. Christopher W. Mauche, Duane A. Liedahl, & Kevin B. Fournier. 588, L101 (2003)
- FOURRE, R. A Polarization Survey of SiO Maser Variability in Evolved Stars. J. Glenn, P. R. Jewell, R. Fourre, & L. Miaja. 588, 478 (2003)
- Fox, D. W. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- See Frail, D. A., et al. The Broadband Afterglow of GRB 980703.
- FRAGILE, P. CHRIS. Supernova Enrichment of Dwarf Spheroidal Galaxies. P. Chris Fragile, Stephen D. Murray, Peter Anninos, & Douglas N. C. Lin. 590, 778 (2003)
- FRAIL, D. A. A Submillimeter and Radio Survey of Gamma-Ray Burst Host Galaxies: A Glimpse into the Future of Star Formation Studies. E. Berger, L. L. Cowie, S. R. Kulkarni, D. A. Frail, H. Aussel, & A. J. Barger. 588, 99 (2003)
 - See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump. Variability of Submillijansky Radio Sources. C. L. Carilli, R. J. Ivison, & D. A. Frail. 590, 192 (2003)
 - A Standard Kinetic Energy Reservoir in Gamma-Ray Burst Afterglows. E. Berger, S. R. Kulkarni, & D. A. Frail. 590, 379 (2003)
 - The Broadband Afterglow of GRB 980703. D. A. Frail, S. A. Yost, E. Berger, F. A. Harrison, R. Sari, S. R. Kulkarni, G. B. Taylor, J. S. Bloom, D. W. Fox, G. H. Moriarty-Schieven, & P. A. Price. 590, 992 (2003)
 - The Nearby Neutron Star RX J0720.4—3125 from Radio to X-Rays. D. L. Kaplan, M. H. van Kerkwijk, H. L. Marshall, B. A. Jacoby, S. R. Kulkarni, & D. A. Frail. 590, 1008 (2003)
- FRANK, JUHAN. Galaxy Formation in Triaxial Halos: Black Hole–Bulge–Dark Halo Correlation. Amr A. El-Zant, Isaac Shlosman, Mitchell C. Begelman, & Juhan Frank. 590, 641 (2003)
- Franx, M. See Daddi, E., et al. Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{\rm phot} < 4$ in the Hubble Deep Field–South.
- Franx, Marijn. See Blakeslee, John P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
 - Cl 1358+62: Characterizing the Physical Properties of Cluster Galaxies at z = 0.33. Kim-Vy H. Tran, Luc Simard, Garth Illingworth, & Marijn Franx. 590, 238 (2003)
- FRASER, O. See TEEGARDEN, B. J., et al. Discovery of a New Nearby Star.
- FRIEDEL, D. N. A Survey of Acetic Acid toward Hot Molecular Cores. A. Remijan, L. E. Snyder, D. N. Friedel, S.-Y. Liu, & R. Y. Shah. 590, 314 (2003)
- FRONTERA, F. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- FRYER, CHRIS L. Neutrino-driven Explosions in Gamma-Ray Bursts and Hypernovae. Chris L. Fryer & Peter Mészáros. 588, L25 (2003)
- FUJIWARA, HIDEO. See KAMEGAI, KAZUHISA, et al. Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud.
- FUKAGAWA, MISATO. Near-Infrared Imaging of Circumstellar Disk around Herbig Ae star HD 150193 A. Misato Fukagawa, Motohide Tamura, Yoichi Itoh, Saeko S. Hayashi, & Yumiko Oasa. 590, L49 (2003)
- FUKUGITA, MASATAKA. See YANNY, BRIAN, et al. A Low-Latitude Halo Stream around the Milky Way.
- FUKUSHIGE, TOSHIYUKI. Structure of Dark Matter Halos from Hierarchical Clustering. II. Dependence of Cosmological Models in Cluster-sized Halos. *Toshiyuki Fukushige & Junichiro Makino*. 588, 674 (2003)
- FULLERTON, A. W. Far Ultraviolet Spectroscopic Explorer Snapshot Survey of O vi Variability in the Winds of 66 OB-Type Stars. N. Lehner, A. W. Fullerton, D. Massa, K. R. Sembach, & J. Zsargó. 589, 526 (2003)
- FURLANETTO, STEVEN R. Metal Absorption Lines as Probes of the Intergalactic Medium Prior to the Reionization Epoch. Steven R. Furlanetto & Abraham Loeb. 588, 18 (2003)
- FURUSAWA, HISANORI. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
- GABRIEL, A. H. The Contribution of Polar Plumes to the Fast Solar Wind. A. H. Gabriel, F. Bely-Dubau, & P. Lemaire. 589, 623 (2003)
- GAENSLER, B. M. XMM-Newton Observations of PSR B1823-13: An Asymmetric Synchrotron Nebula around a Vela-like Pulsar. B. M.

- Gaensler, N. S. Schulz, V. M. Kaspi, M. J. Pivovaroff, & W. E. Becker. 588, 441 (2003)
- GAESSLER, W. See GOTO, MIWA, et al. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae.
- GAESSLER, WOLFGANG. See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.
- GALAMA, T. J. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- GALLAGHER, J. S. A Search for Ionized Gas in the Draco and Ursa Minor Dwarf Spheroidal Galaxies. J. S. Gallagher, G. J. Madsen, R. J. Reynolds, E. K. Grebel, & T. A. Smecker-Hane. 588, 326 (2003)
- GALLAGHER, PETER T. Rapid Acceleration of a Coronal Mass Ejection in the Low Corona and Implications for Propagation. Peter T. Gallagher, Gareth R. Lawrence, & Brian R. Dennis. 588, L53 (2003)
- GALLIMORE, J. F. The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348. A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
- GALLOWAY, DUNCAN K. Eddington-limited X-Ray Bursts as Distance Indicators. I. Systematic Trends and Spherical Symmetry in Bursts from 4U 1728–34. Duncan K. Galloway, Dimitrios Psaltis, Deepto Chakrabarty, & Michael P. Muno. 590, 999 (2003)
- GAL-YAM, A. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- GAMMIE, CHARLES F. HARM: A Numerical Scheme for General Relativistic Magnetohydrodynamics. Charles F. Gammie, Jonathan C. McKinney, & Gábor Tóth. 589, 444 (2003)
- GARCÍA, A. Quasars Clustering at z ≈ 3 on Scales ≤ 10h⁻¹ Mpc. L. Infante, J. Varela, M. Moles, G. Hertling, A. García, & F. Menanteau. 588, 90 (2003)
- GARCIA, M. R. Discovery of Radio/X-Ray/Optical Resolved Supernova Remnants in the Center of the Andromeda Galaxy. Albert Kong, L. O. Sjouwerman, B. F. Williams, M. R. Garcia, & J. R. Dickel. 590, L21 (2003)
- GARDNER, JONATHAN P. Emission-Line Galaxies in the STIS Parallel Survey.
 II. Star Formation Density. Harry I. Teplitz, Nicholas R. Collins, Jonathan P. Gardner, Robert S. Hill, & Jason Rhodes. 589, 704 (2003)
- GARMIRE, G. P. Chandra Observations of QSO 2237+0305. X. Dai, G. Chartas, E. Agol, M. W. Bautz, & G. P. Garmire. 589, 100 (2003) See Muno, M. P., et al. A Deep Chandra Catalog of X-Ray Point Sources toward the Galactic Center.
- GAUDI, B. SCOTT. Periodic Flux Variability of Stars Due to the Reflex Doppler Effect Induced by Planetary Companions. Abraham Loeb & B. Scott Gaudi. 588, L117 (2003)
- GAULT, AMANDA C. Spectroscopic and Spectropolarimetric Observations of V838 Monocerotis. John P. Wisniewski, Nancy D. Morrison, Karen S. Bjorkman, Anatoly S. Miroshnichenko, Amanda C. Gault, Jennifer L. Hoffman, Marilyn R. Meade, & Jason M. Nett. 588, 486 (2003)
- GAVRIIL, F. P. A Major Soft Gamma Repeater-like Outburst and Rotation Glitch in the No-longer-so-anomalous X-Ray Pulsar IE 2259+586. V. M. Kaspi, F. P. Gavriil, P. M. Woods, J. B. Jensen, M. S. E. Roberts, & D. Chakrabarty. 588, L93 (2003)
- GAYLEY, K. G. The Statistical Sobolev-Rosseland Mean and the Effects of Frequency Redistribution on Wolf-Rayet Wind Driving. A. J. Onifer & K. G. Gayley. 590, 473 (2003)
- GAZTAÑAGA, ENRIQUE. Correlation between Galaxies and Quasi-stellar Objects in the Sloan Digital Sky Survey: A Signal from Gravitational Lensing Magnification? *Enrique Gaztañaga*. 589, 82 (2003)
- GEORGANOPOULOS, MARKOS. Relativistic and Slowing Down: The Flow in the Hot Spots of Powerful Radio Galaxies and Quasars. Markos Georganopoulos & Demosthenes Kazanas. 589, L5 (2003)
- GEORGE, IAN M. The Nature of the Ultraviolet/X-Ray Absorber in PG 2302+029. Bassem M. Sabra, Fred Hamann, Buell T. Jannuzi, Ian M. George, & Joseph C. Shields. 590, 66 (2003)
- GERARDY, C. L. See SCHAEFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
- GHAVAMIAN, PARVIZ. The Physics of Supernova Blast Waves. I. Kinematics of DEM L71 in the Large Magellanic Cloud. Parviz Ghavamian, Cara E. Rakowski, John P. Hughes, & T. B. Williams. 590, 833 (2003)
- The Physics of Supernova Remnant Blast Waves. II. Electron-Ion Equilibration in DEM L71 in the Large Magellanic Cloud. Cara E. Rakowski, Parviz Ghavamian, & John P. Hughes. 590, 846 (2003)

- GHEZ, A. M. The First Detection of Spatially Resolved Mid-Infrared Scattered Light from a Protoplanetary Disk. C. McCabe, G. Duchêne, & A. M. Ghez. 588, L113 (2003)
- GIBSON, S. E. The Emergence of a Twisted Magnetic Flux Tube into a Preexisting Coronal Arcade. Y. Fan & S. E. Gibson. 589, L105 (2003)
- GIBSON, STEVEN J. The Pleiades Reflection Nebula. I. Ultraviolet, Optical, and Far-Infrared Imaging Photometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 347 (2003)
 - The Pleiades Reflection Nebula. II. Simple Model Constraints on Dust Properties and Scattering Geometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 362 (2003)
- GILLI, R. See WANG, J., et al. A Puzzling X-Ray Source Found in the Chandra Deep Field-South.
- GILMORE, DIANE M. The Speed and Orientation of the Parsec-Scale Jet in 3C 279. B. Glenn Piner, Stephen C. Unwin, Ann E. Wehrle, Alma C. Zook, C. Megan Urry, & Diane M. Gilmore. 588, 716 (2003)
- GILMORE, GERARD. A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy. Jan T. Kleyna, Mark I. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 588, L21 (2003)
- A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy: Erratum (ApJ, 588, L21 [2003]). Jan T. Kleyna, Mark I. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 589, L59 (2003) (Orig. paper in 588, L21 (2003))
- GIOIA, I. See VIKHLININ, A., et al. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$.
- GIOMMI, PAOLO. What Types of Jets Does Nature Make? A New Population of Radio Quasars. Paolo Padovani, Eric S. Perlman, Hermine Landt, Paolo Giommi, & Matteo Perri. 588, 128 (2003)
- GISLER, G. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- GIZON, L. Determining the Inclination of the Rotation Axis of a Sun-like Star. L. Gizon & S. K. Solanki. 589, 1009 (2003)
- GLENN, J. A Polarization Survey of SiO Maser Variability in Evolved Stars. J. Glenn, P. R. Jewell, R. Fourre, & L. Miaja. 588, 478 (2003)
- GNEDIN, OLEG Y. Dynamical Evolution of Galaxies in Clusters. Oleg Y. Gnedin. 589, 752 (2003)
- GÖTZ, D. See MEREGHETTI, S., et al. *Integral* and *XMM-Newton* Observations of the Weak Gamma-Ray Burst GRB 030227.
- GOLD, R. E. Evidence for a Suprathermal Seed Population of Heavy Ions Accelerated by Interplanetary Shocks near 1 AU. M. I. Desai, G. M. Mason, J. R. Dwyer, J. E. Mazur, R. E. Gold, S. M. Krimigis, C. W. Smith, & R. M. Skoug. 588, 1149 (2003)
- GOLDHABER, GERSON. Multicolor Light Curves of Type Ia Supernovae on the Color-Magnitude Diagram: A Novel Step toward More Precise Distance and Extinction Estimates. *Lifan Wang, Gerson Goldhaber, Greg Aldering,* & Saul Perlmutter. 590, 944 (2003)
- GOLDSMITH, PAUL F. Detections of OH toward the Extreme Carbon Star IRC +10216. K. E. Saavik Ford, David A. Neufeld, Paul F. Goldsmith, & Gary J. Melnick. 589, 430 (2003)
- Submillimeter Wave Astronomy Satellite Mapping Observations of Water Vapor around Sagittarius B2. David A. Neufeld, Edwin A. Bergin, Gary J. Melnick, & Paul F. Goldsmith. 590, 882 (2003)
- GOLENETSKII, S. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- GOLIMOWSKI, DAVID A. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field-North with the Advanced Camera for Surveys.
- GOLUB, L. Constraints on Active Region Coronal Heating. S. K. Antiochos, J. T. Karpen, E. E. DeLuca, L. Golub, & P. Hamilton. 590, 547 (2003)
- GOMBOSI, TAMAS I. A Three-dimensional Flux Rope Model for Coronal Mass Ejections Based on a Loss of Equilibrium. Ilia I. Roussev, Terry G. Forbes, Tamas I. Gombosi, Igor V. Sokolov, Darren L. DeZeeuw, & Joachim Birn. 588, L45 (2003)
- GÓMEZ, JOSÉ F. See TRINIDAD, MIGUEL A., et al. Observations of Water Masers and Radio Continuum Emission in AFGL 2591.
- GONZÁLEZ, J. J. Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González. 590, L91 (2003)
- GOODMAN, ALYSSA A. The Spectral Correlation Function of Molecular Clouds: A Statistical Test for Theoretical Models. Paolo Padoan, Alyssa A. Goodman, & Mika Juvela. 588, 881 (2003)
- GOODMAN, J. A. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.

- GORDON, K. D. Dust Grain Size Distributions from MRN to MEM. Geoffrey C. Clayton, Michael J. Wolff, Ulysses J. Sofia, K. D. Gordon, & K. A. Misselt. 588, 871 (2003)
- GORDON, M. A. The Stellar "Wind" of MWC 349A. M. A. Gordon. 589, 953 (2003)
- GORGAS, J. Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González. 590, L91 (2003)
- Goto, Miwa. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae. Miwa Goto, W. Gaessler, Yutaka Hayano, Masanori Iye, Yukiko Kamata, Tomio Kanzawa, Naoto Kobayashi, Yosuke Minowa, D. J. Saint-Jacques, Hideki Takami, Naruhisa Takato, & Hiroshi Terada. 589 419 (2003)
 - See Pyo, Tae-Soo, et al. Adaptive Optics Spectroscopy of the [Fe $\scriptstyle\rm II$] Outflow from DG Tauri.
- See Iye, Masanori, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim1.5$.
- GOTTHELF, E. V. Search for a Point-Source Counterpart of the Unidentified Gamma-Ray Source TeV 12032+4130 in Cygnus. R. Mukherjee, J. P. Halpern, E. V. Gotthelf, M. Eracleous. & N. Mirabal. 589, 487 (2003)
- GOTTHELF, ERIC V. The Pulsar Wind Nebula in G11.2—0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)
- GOTTLIEB, C. A. Precise Millimeter-Wave Laboratory Frequences for CS and C34S. C. A. Gottlieb, P. C. Myers, & P. Thaddeus. 588, 655 (2003)
- The Radio Spectrum of the Phenyl Radical. M. C. McCarthy, R. J. McMahon, C. A. Gottlieb, J. B. Dudek, J. F. Stanton, & P. Thaddeus. 590, L61 (2003)
- GRATTON, R. The Complex H\(\alpha\) Line Profile of the Bright Companion to PSR J1740-5340 in NGC 6397. E. Sabbi, R. Gratton, F. R. Ferraro, A. Bragaglia, A. Possenti, N. D'Amico, & F. Camilo. 589, L41 (2003)
- Greaves, Jane S. Magnetic Structure of a Dark Bok Globule. Jacques P. Vallée, Jane S. Greaves, & Jason D. Fiege. 588, 910 (2003)
- GREBEL, E. K. A Search for Ionized Gas in the Draco and Ursa Minor Dwarf Spheroidal Galaxies. J. S. Gallagher, G. J. Madsen, R. J. Reynolds, E. K. Grebel, & T. A. Smecker-Hane. 588, 326 (2003)
- Grebel, Eva K. See Yanny, Brian, et al. A Low-Latitude Halo Stream around the Milky Way.
- Draco: A Failure of the Tidal Model. Ralf S. Klessen, Eva K. Grebel, & Daniel Harbeck. 589, 798 (2003)
- GRECHNEV, V. V. Quasi-periodic Pulsations in a Solar Microwave Burst. V. V. Grechnev, S. M. White, & M. R. Kundu. 588, 1163 (2003)
- Green, Elizabeth M. Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)
- GREENHILL, L. J. A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy. L. J. Greenhill, R. S. Booth, S. P. Ellingsen, J. R. Herrnstein, D. L. Jauncey, P. M. McCulloch, J. M. Moran, R. P. Norris, J. E. Reynolds, & A. K. Tzioumis. 590, 162 (2003)
- Greenhill, Lincoln J. Simultaneous Chandra and Rossi X-Ray Timing Explorer Observations of the Nearby Bright Seyfert 2 Galaxy NGC 4945. Chris Done, Greg M. Madejski, Piotr T. Zycki, & Lincoln J. Greenhill. 588, 763 (2003)
- GREINER, J. The 590 Day Long-Term Periodicity of the Microquasar GRS 1915+105. A. Rau, J. Greiner, & M. L. McCollough. 590, L37 (2003)
- GRIFFITHS, RICHARD E. Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped Ly α Absorption: Constraints on the Cosmic Neutral Gas-Phase Metallicity at Redshift $z\approx 0.4$. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003)
- GRINDLAY, J. E. X-Ray Studies of Two Neutron Stars in 47 Tucanae: Toward Constraints on the Equation of State. C. O. Heinke, J. E. Grindlay, D. A. Lloyd, & P. D. Edmonds. 588, 452 (2003)
- A Chandra X-Ray Study of the Dense Globular Cluster Terzan 5. C. O. Heinke, P. D. Edmonds, J. E. Grindlay, D. A. Lloyd, H. N. Cohn, & P. M. Lugger. 590, 809 (2003)

- GRONWALL, CARYL. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- GRUENDL, ROBERT A. Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martin A. Guerrero, & Margarita Rosado. 590, 306 (2003)
- Gu, M. F. Radiative Recombination Rate Coefficients for Bare through F-like Isosequences of Mg, Si, S, Ar, Ca, Fe, and Ni. M. F. Gu. 589, 1085 (2003)
- Dielectronic Recombination Rate Coefficients for H-Like through Ne-Like Isosequences of Mg, Si, S, Ar, Ca, Fe, and Ni. *M. F. Gu.* 590, 1131 (2003)
- GU, PIN-GAO. The Effect of Tidal Inflation Instability on the Mass and Dynamical Evolution of Extrasolar Planets with Ultrashort Periods. Pin-Gao Gu, Douglas N. C. Lin, & Peter H. Bodenheimer. 588, 509 (2003)
- GÜDEL, MANUEL. Separating the X-Ray Emissions of UV Ceti A and B with Chandra. Marc Audard, Manuel Güdel, & Stephen L. Skinner. 589, 983 (2003)
- GUERRERO, MARTÍN A. Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martín A. Guerrero, & Margarita Rosado. 590, 306 (2003)

GUIDORZI, C. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.

- GUINAN, E. F. Intrinsic Properties of the Young Stellar Object SU Aurigae. L. E. DeWarf, J. F. Sepinsky, E. F. Guinan, I. Ribas, & I. Nadalin. 590, 357 (2003)
- GURMAN, JOSEPH B. See NAGATA, SHIN'ICHI, et al. Spatial and Temporal Properties of Hot and Cool Coronal Loops.
- HABE, ASAO. Cluster Morphology as a Test of Different Cosmological Models. Tamon Suwa, Asao Habe, Kohji Yoshikawa, & Takashi Okamoto. 588, 7 (2003)
- HACHISU, IZUMI. A New Clue to the Transition Mechanism between Optical High and Low States of the Supersoft X-Ray Source RX J0513.9—6951, Implied from the Recurrent Nova CI Aquilae 2000 Outburst Model. *Izumi Hachisu & Mariko Kato*. 588, 1003 (2003)
- RX J0513.9—6951: The First Example of Accretion Wind Evolution, a Key Evolutionary Process to Type Ia Supernovae. *Izumi Hachisu & Mariko Kato.* 590, 445 (2003)
- HAINES, T. J. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- HALE, D. D. S. Interferometry on Mira in the Mid-Infrared; Cyclic Variability of the Continuum Diameter and the Effect of Spectral Lines on Apparent Size. J. Weiner, D. D. S. Hale, & C. H. Townes. 588, 1064 (2003)
- Asymptotic Giant Branch and Supergiant Stellar Diameters in the Mid-Infrared. J. Weiner, D. D. S. Hale, & C. H. Townes. 589, 976 (2003)
- HALPERN, J. P. Search for a Point-Source Counterpart of the Unidentified Gamma-Ray Source TeV J2032+4130 in Cygnus. R. Mukherjee, J. P. Halpern, E. V. Gotthelf, M. Eracleous, & N. Mirabal. 589, 487 (2003)
- HAMABE, MASARU. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
- HAMANN, F. Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)
- HAMANN, FRED. See BECHTOLD, JILL, et al. Chandra Survey of Radio-quiet, High-Redshift Quasars.
- The Nature of the Ultraviolet/X-Ray Absorber in PG 2302+029. Bassem M. Sabra, Fred Hamann, Buell T. Jannuzi, Ian M. George, & Joseph C. Shields. 590, 66 (2003)
- HAMILTON, P. Constraints on Active Region Coronal Heating. S. K. Antiochos, J. T. Karpen, E. E. DeLuca, L. Golub, & P. Hamilton. 590, 547 (2003)
- HANCOCK, T. The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebey, M. Fich, R. Taylor, Y. Cao, & T. Hancock. 590, 906 (2003)
- HANES, D. A. Substructure in the Andromeda Galaxy Globular Cluster System. K. M. Perrett, D. A. Stiff, D. A. Hanes, & T. J. Bridges. 589, 790 (2003)

- HANNESTAD, STEEN. The Density Profile of Cluster-Scale Dark Matter Halos. Häkon Dahle, Steen Hannestad, & Jesper Sommer-Larsen. 588, L73 (2003)
- HANSON, M. M. Two Molecular Clouds near M17. T. L. Wilson, M. M. Hanson, & D. Muders. 590, 895 (2003)
- HARA, H. Variation of X-Ray Bright Point Number over the Solar Activity Cycle. H. Hara & K. Nakakubo-Marimoto. 589, 1062 (2003)
- HARA, HIROHISA. See NAGATA, SHIN'ICHI, et al. Spatial and Temporal Properties of Hot and Cool Coronal Loops.
- HARBECK, DANIEL. Draco: A Failure of the Tidal Model. Ralf S. Klessen, Eva K. Grebel, & Daniel Harbeck. 589, 798 (2003)
- HARDING, ALICE K. Extended Acceleration in Slot Gaps and Pulsar High-Energy Emission. Alex G. Muslimov & Alice K. Harding. 588, 430 (2003)
- HARNDEN, F.R., JR. Chandra Observations of the Young Open Cluster NGC 2516. F. Damiani, E. Flaccomio, G. Micela, S. Sciortino, F.R. Harnden, Jr., S.S. Murray, S.J. Wolk, & R.D. Jeffries. 588, 1009 (2003)
- HARO-CORZO, SINHUE. Technique for Detecting Warm-Hot Intergalactic Gas in Quasar Ultraviolet Spectra. Luc Binette, Mario Rodríguez-Martínez, Sinhue Haro-Corzo, & Isidro Ballinas. 590, 58 (2003)
- HARRISON, F. A. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
 - See Frail, D. A., et al. The Broadband Afterglow of GRB 980703.
- HARSHMAN, K. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- HARTIG, GEORGE F. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- HARTMANN, LEE. New Low-Mass Members of the Taurus Star-forming Region. K. L. Luhman, Cesar Briceno, John R. Stauffer, Lee Hartmann, D. Barrado y Navascues, & Nelson Caldwell. 590, 348 (2003)
- HARWIT, MARTIN. Chemical Composition of the Early Universe. Martin Harwit & Marco Spaans. 589, 53 (2003)
- HASEGAWA, S. Discovery of Dust Trail of STARDUST Comet Sample Return Mission Target: 81P/Wild 2. M. Ishiguro, S. M. Kwon, Y. Sarugaku, S. Hasegawa, F. Usui, S. Nishiura, Y. Nakada, & H. Yano. 589, L101 (2003)
- HASTINGS, N. C. Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)
- HATHAWAY, DAVID H. Evidence That a Deep Meridional Flow Sets the Sunspot Cycle Period. David H. Hathaway, Dibyendu Nandy, Robert M. Wilson, & Edwin J. Reichmann. 589, 665 (2003)
- HAUSCHILDT, PETER H. Detectibility of Mixed Unburnt C+O in Type Ia Supernova Spectra. E. Baron, Eric J. Lentz, & Peter H. Hauschildt. 588, L29 (2003)
- HAWLEY, JOHN F. A Numerical Method for General Relativistic Magnetohydrodynamics. Jean-Pierre De Villiers & John F. Hawley. 589, 458 (2003)
 - Gap Formation by Planets in Turbulent Protostellar Disks. Wayne F. Winters, Steven A. Balbus, & John F. Hawley. 589, 543 (2003)
- HAWLEY, S. L. See TEEGARDEN, B. J., et al. Discovery of a New Nearby Star. HAWLEY, SUZANNE L. Transition Region Emission from Very Low Mass Stars. Suzanne L. Hawley & Christopher M. Johns-Krull. 588, L109 (2003)
- HAYANO, YUTAKA. See GOTO, MIWA, et al. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae.
 - See Pyo, Tae-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II]
 Outflow from DG Tauri.
- HAYASHI, MASAHIKO. See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.
- HAYASHI, SAEKO S. Near-Infrared Imaging of Circumstellar Disk around Herbig Ae star HD 150193 A. Misato Fukagawa, Motohide Tamura, Yoichi Itoh, Saeko S. Hayashi, & Yumiko Oasa. 590, L49 (2003)
- HEAP, S. R. A Tale of Two Stars: The Extreme O7 laf+ Supergiant AV 83 and the OC7.5 III(f) Star AV 69. D. John Hillier. T. Lanz, S. R. Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 588, 1039 (2003)
- HEIDT, J. Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)
- HEINDL, W. A. Extended Emission from Cygnus X-3 Detected with Chandra. W. A. Heindl, J. A. Tomsick, R. Wijnands, & D. M. Smith. 588, L97 (2003)

- GHEZ, A. M. The First Detection of Spatially Resolved Mid-Infrared Scattered Light from a Protoplanetary Disk. C. McCabe, G. Duchêne, & A. M. Ghez, 588, L113 (2003)
- GIBSON, S. E. The Emergence of a Twisted Magnetic Flux Tube into a Preexisting Coronal Arcade. Y. Fan & S. E. Gibson. 589, L105 (2003)
- GIBSON, STEVEN J. The Pleiades Reflection Nebula. I. Ultraviolet, Optical, and Far-Infrared Imaging Photometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 347 (2003)
 - The Pleiades Reflection Nebula. II. Simple Model Constraints on Dust Properties and Scattering Geometry. Steven J. Gibson & Kenneth H. Nordsieck, 589, 362 (2003)
- Gilli, R. See Wang, J., et al. A Puzzling X-Ray Source Found in the Chandra Deep Field–South.
- GILMORE, DIANE M. The Speed and Orientation of the Parsec-Scale Jet in 3C 279. B. Glenn Piner, Stephen C. Unwin, Ann E. Wehrle, Alma C. Zook, C. Megan Urry, & Diane M. Gilmore. 588, 716 (2003)
- GILMORE, GERARD. A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy. Jan T. Kleyna, Mark J. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 588, L21 (2003)
- A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy: Erratum (ApJ, 588, L21 [2003]). Jan T. Kleyna, Mark I. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 589, L59 (2003) (Orig. paper in 588, L21 (2003))
- Giola, I. See Vikhlinin, A., et al. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$.
- GIOMMI, PAOLO. What Types of Jets Does Nature Make? A New Population of Radio Quasars. Paolo Padovani, Eric S. Perlman, Hermine Landt, Paolo Giommi, & Matteo Perri. 588, 128 (2003)
- GISLER, G. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- GIZON, L. Determining the Inclination of the Rotation Axis of a Sun-like Star. L. Gizon & S. K. Solanki. 589, 1009 (2003)
- GLENN, J. A Polarization Survey of SiO Maser Variability in Evolved Stars. J. Glenn, P. R. Jewell, R. Fourre, & L. Miaja. 588, 478 (2003)
- GNEDIN, OLEG Y. Dynamical Evolution of Galaxies in Clusters. Oleg Y. Gnedin. 589, 752 (2003)
- GÖTZ, D. See MEREGHETTI, S., et al. *Integral* and *XMM-Newton* Observations of the Weak Gamma-Ray Burst GRB 030227.
- GOLD, R. E. Evidence for a Suprathermal Seed Population of Heavy Ions Accelerated by Interplanetary Shocks near 1 AU. M. I. Desai, G. M. Mason, J. R. Dwyer, J. E. Mazur, R. E. Gold, S. M. Krimigis, C. W. Smith, & R. M. Skoug, 588, 1149 (2003)
- GOLDHABER, GERSON. Multicolor Light Curves of Type Ia Supernovae on the Color-Magnitude Diagram: A Novel Step toward More Precise Distance and Extinction Estimates. Lifan Wang, Gerson Goldhaber, Greg Aldering, & Saul Perlmutter. 590, 944 (2003)
- GOLDSMITH, PAUL F. Detections of OH toward the Extreme Carbon Star IRC +10216. K. E. Saavik Ford, David A. Neufeld, Paul F. Goldsmith, & Gary J. Melnick. 589, 430 (2003)
- Submillimeter Wave Astronomy Satellite Mapping Observations of Water Vapor around Sagittarius B2. David A. Neufeld, Edwin A. Bergin, Gary J. Melnick, & Paul F. Goldsmith. 590, 882 (2003)
- GOLENETSKII, S. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- GOLIMOWSKI, DAVID A. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- GOLUB, L. Constraints on Active Region Coronal Heating. S. K. Antiochos, J. T. Karpen, E. E. DeLuca, L. Golub, & P. Hamilton. 590, 547 (2003)
- GOMBOSI, TAMAS I. A Three-dimensional Flux Rope Model for Coronal Mass Ejections Based on a Loss of Equilibrium. Ilia I. Roussev, Terry G. Forbes, Tamas I. Gombosi, Igor V. Sokolov, Darren L. DeZeeuw, & Joachim Birn. 588, L45 (2003)
- GÓMEZ, JOSÉ F. See TRINIDAD, MIGUEL A., et al. Observations of Water Masers and Radio Continuum Emission in AFGL 2591.
- GONZÁLEZ, J. J. Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González. 590, L91 (2003)
- GOODMAN, ALYSSA A. The Spectral Correlation Function of Molecular Clouds: A Statistical Test for Theoretical Models. Paolo Padoan, Alyssa A. Goodman, & Mika Juvela. 588, 881 (2003)
- GOODMAN, J. A. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.

- GORDON, K. D. Dust Grain Size Distributions from MRN to MEM. Geoffrey C. Clayton, Michael J. Wolff, Ulysses J. Sofia, K. D. Gordon, & K. A. Misselt. 588, 871 (2003)
- GORDON, M. A. The Stellar "Wind" of MWC 349A. M. A. Gordon. 589, 953 (2003)
- GORGAS, J. Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González, 590, L91 (2003)
- Goto, Miwa. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae. Miwa Goto, W. Gaessler, Yutaka Hayano, Masanori Iye, Yukiko Kamata, Tomio Kanzawa, Naoto Kobayashi, Yosuke Minowa, D. J. Saint-Jacques, Hideki Takami, Naruhisa Takato, & Hiroshi Terada. 589, 419 (2003)
 - See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.
 - See IYE, MASANORI, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim$ 1.5.
- GOTTHELF, E. V. Search for a Point-Source Counterpart of the Unidentified Gamma-Ray Source TeV J2032+4130 in Cygnus. R. Mukherjee, J. P. Halpern, E. V. Gotthelf, M. Eracleous, & N. Mirabal. 589, 487 (2003)
- GOTTHELF, ERIC V. The Pulsar Wind Nebula in G11.2—0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)
- GOTTLIEB, C. A. Precise Millimeter-Wave Laboratory Frequences for CS and C34S. C. A. Gottlieb, P. C. Myers, & P. Thaddeus. 588, 655 (2003)
 - The Radio Spectrum of the Phenyl Radical. M. C. McCarthy, R. J. McMahon, C. A. Gottlieb, J. B. Dudek, J. F. Stanton, & P. Thaddeus. 590, L61 (2003)
- GRATTON, R. The Complex Hα Line Profile of the Bright Companion to PSR J1740-5340 in NGC 6397. E. Sabbi, R. Gratton, F. R. Ferraro, A. Bragaglia, A. Possenti, N. D'Amico, & F. Camilo. 589, L41 (2003)
- Greaves, Jane S. Magnetic Structure of a Dark Bok Globule. Jacques P. Vallée, Jane S. Greaves, & Jason D. Fiege. 588, 910 (2003)
- GREBEL, E. K. A Search for Ionized Gas in the Draco and Ursa Minor Dwarf Spheroidal Galaxies. J. S. Gallagher, G. J. Madsen, R. J. Reynolds, E. K. Grebel, & T. A. Smecker-Hane. 588, 326 (2003)
- Grebel, Eva K. See Yanny, Brian, et al. A Low-Latitude Halo Stream around the Milky Way.
 - Draco: A Failure of the Tidal Model. Ralf S. Klessen, Eva K. Grebel, & Daniel Harbeck. 589, 798 (2003)
- GRECHNEV, V. V. Quasi-periodic Pulsations in a Solar Microwave Burst. V. V. Grechnev, S. M. White, & M. R. Kundu. 588, 1163 (2003)
- Green, Elizabeth M. Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)
- GREENHILL, L. J. A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy. L. J. Greenhill, R. S. Booth, S. P. Ellingsen, J. R. Herrnstein, D. L. Jauncey, P. M. McCulloch, J. M. Moran, R. P. Norris, J. E. Reynolds, & A. K. Tzioumis. 590, 162 (2003)
- GREENHILL, LINCOLN J. Simultaneous Chandra and Rossi X-Ray Timing Explorer Observations of the Nearby Bright Seyfert 2 Galaxy NGC 4945. Chris Done, Greg M. Madejski, Piotr T. Zycki, & Lincoln J. Greenhill. 588, 763 (2003)
- GREINER, J. The 590 Day Long-Term Periodicity of the Microquasar GRS 1915+105. A. Rau, J. Greiner, & M. L. McCollough. 590, L37 (2003)
- GRIFFITYS, RICHARD E. Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped Ly α Absorption: Constraints on the Cosmic Neutral Gas-Phase Metallicity at Redshift $z\approx 0.4$. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003)
- GRINDLAY, J. E. X-Ray Studies of Two Neutron Stars in 47 Tucanae: Toward Constraints on the Equation of State. C. O. Heinke, J. E. Grindlay, D. A. Lloyd, & P. D. Edmonds. 588, 452 (2003)
- A Chandra X-Ray Study of the Dense Globular Cluster Terzan 5. C. O. Heinke, P. D. Edmonds, J. E. Grindlay, D. A. Lloyd, H. N. Cohn, & P. M. Lugger. 590, 809 (2003)

- Gronwall, Caryl. See Blakeslee, John P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- GRUENDL, ROBERT A. Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martin A. Guerrero, & Margarita Rosado. 590, 306 (2003)
- Gu, M. F. Radiative Recombination Rate Coefficients for Bare through F-like Isosequences of Mg, Si, S, Ar, Ca, Fe, and Ni. M. F. Gu. 589, 1085 (2003)
- Dielectronic Recombination Rate Coefficients for H-Like through Ne-Like Isosequences of Mg, Si, S, Ar, Ca, Fe, and Ni. *M. F. Gu.* 590, 1131 (2003)
- GU, PIN-GAO. The Effect of Tidal Inflation Instability on the Mass and Dynamical Evolution of Extrasolar Planets with Ultrashort Periods. Pin-Gao Gu, Douglas N. C. Lin, & Peter H. Bodenheimer. 588, 509 (2003)
- GÜDEL, MANUEL. Separating the X-Ray Emissions of UV Ceti A and B with Chandra. Marc Audard, Manuel Güdel, & Stephen L. Skinner. 589, 983 (2003)
- GUERRERO, MARTÍN A. Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martín A. Guerrero, & Margarita Rosado. 590, 306 (2003)
- GUIDORZI, C. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- GUINAN, E. F. Intrinsic Properties of the Young Stellar Object SU Aurigae. L. E. DeWarf, J. F. Sepinsky, E. F. Guinan, I. Ribas, & I. Nadalin. 590, 357 (2003)
- GURMAN, JOSEPH B. See NAGATA, SHIN'ICHI, et al. Spatial and Temporal Properties of Hot and Cool Coronal Loops.
- HABE, ASAO. Cluster Morphology as a Test of Different Cosmological Models. Tamon Suwa, Asao Habe, Kohji Yoshikawa, & Takashi Okamoto. 588, 7 (2003)
- HACHISU, IZUMI. A New Clue to the Transition Mechanism between Optical High and Low States of the Supersoft X-Ray Source RX J0513.9—6951, Implied from the Recurrent Nova CI Aquilae 2000 Outburst Model. *Izumi Hachisu & Mariko Kato*. 588, 1003 (2003)
- RX J0513.9—6951: The First Example of Accretion Wind Evolution, a Key Evolutionary Process to Type Ia Supernovae. *Izumi Hachisu & Mariko Kato.* 590, 445 (2003)
- HAINES, T. J. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- HALE, D. D. S. Interferometry on Mira in the Mid-Infrared; Cyclic Variability of the Continuum Diameter and the Effect of Spectral Lines on Apparent Size. J. Weiner, D. D. S. Hale, & C. H. Townes. 588, 1064 (2003)
- Asymptotic Giant Branch and Supergiant Stellar Diameters in the Mid-Infrared. J. Weiner, D. D. S. Hale, & C. H. Townes. 589, 976 (2003)
- HALPERN, J. P. Search for a Point-Source Counterpart of the Unidentified Gamma-Ray Source TeV 12032+4130 in Cygnus. R. Mukherjee, J. P. Halpern, E. V. Gotthelf, M. Eracleous, & N. Mirabal. 589, 487 (2003)
- HAMABE, MASARU. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H i Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
- HAMANN, F. Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)
- HAMANN, FRED. See BECHTOLD, JILL, et al. Chandra Survey of Radio-quiet, High-Redshift Quasars.
 - The Nature of the Ultraviolet/X-Ray Absorber in PG 2302+029. Bassem M. Sabra, Fred Hamann, Buell T. Jannuzi, Ian M. George, & Joseph C. Shields. 590, 66 (2003)
- HAMILTON, P. Constraints on Active Region Coronal Heating. S. K. Antiochos, J. T. Karpen, E. E. DeLuca, L. Golub, & P. Hamilton. 590, 547 (2003)
- HANCOCK, T. The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebey, M. Fich, R. Taylor, Y. Cao, & T. Hancock. 590, 906 (2003)
- HANES, D. A. Substructure in the Andromeda Galaxy Globular Cluster System. K. M. Perrett, D. A. Stiff, D. A. Hanes, & T. J. Bridges. 589, 790 (2003)

- HANNESTAD, STEEN. The Density Profile of Cluster-Scale Dark Matter Halos. Häkon Dahle, Steen Hannestad, & Jesper Sommer-Larsen. 588, L73 (2003)
- HANSON, M. M. Two Molecular Clouds near M17. T. L. Wilson, M. M. Hanson, & D. Muders. 590, 895 (2003)
- HARA, H. Variation of X-Ray Bright Point Number over the Solar Activity Cycle. H. Hara & K. Nakakubo-Marimoto. 589, 1062 (2003)
- HARA, HIROHISA. See NAGATA, SHIN'ICHI, et al. Spatial and Temporal Properties of Hot and Cool Coronal Loops.
- HARBECK, DANIEL. Draco: A Failure of the Tidal Model. Ralf S. Klessen, Eva K. Grebel, & Daniel Harbeck. 589, 798 (2003)
- HARDING, ALICE K. Extended Acceleration in Slot Gaps and Pulsar High-Energy Emission. Alex G. Muslimov & Alice K. Harding. 588, 430 (2003)
- HARNDEN, F.R., JR. Chandra Observations of the Young Open Cluster NGC 2516. F. Damiani, E. Flaccomio, G. Micela, S. Sciortino, F.R. Harnden, Jr., S.S. Murray, S.J. Wolk, & R.D. Jeffries. 588, 1909 (2003)
- HARO-CORZO, SINHUE. Technique for Detecting Warm-Hot Intergalactic Gas in Quasar Ultraviolet Spectra. Luc Binette, Mario Rodríguez-Martínez, Sinhue Haro-Corzo, & Isidro Ballinas. 590, 58 (2003)
- HARRISON, F. A. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
 - See Frail, D. A., et al. The Broadband Afterglow of GRB 980703.
- HARSHMAN, K. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- HARTIG, GEORGE F. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- HARTMANN, LEE. New Low-Mass Members of the Taurus Star-forming Region. K. L. Luhman, Cesar Briceno, John R. Stauffer, Lee Hartmann, D. Barrado y Navascues, & Nelson Caldwell. 590, 348 (2003)
- HARWIT, MARTIN. Chemical Composition of the Early Universe. Martin Harwit & Marco Spaans. 589, 53 (2003)
- HASEGAWA, S. Discovery of Dust Trail of STARDUST Comet Sample Return Mission Target: 81P/Wild 2. M. Ishiguro, S. M. Kwon, Y. Sarugaku, S. Hasegawa, F. Usui, S. Nishiura, Y. Nakada, & H. Yano. 589, L101 (2003)
- HASTINGS, N. C. Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)
- HATHAWAY, DAVID H. Evidence That a Deep Meridional Flow Sets the Sunspot Cycle Period. David H. Hathaway, Dibyendu Nandy, Robert M. Wilson, & Edwin J. Reichmann. 589, 665 (2003)
- HAUSCHILDT, PETER H. Detectibility of Mixed Unburnt C+O in Type Ia Supernova Spectra. E. Baron, Eric J. Lentz, & Peter H. Hauschildt. 588, 1.29 (2003)
- HAWLEY, JOHN F. A Numerical Method for General Relativistic Magnetohydrodynamics. Jean-Pierre De Villiers & John F. Hawley. 589, 458 (2002)
 - Gap Formation by Planets in Turbulent Protostellar Disks. Wayne F. Winters, Steven A. Balbus, & John F. Hawley. 589, 543 (2003)
- HAWLEY, S. L. See TEEGARDEN, B. J., et al. Discovery of a New Nearby Star. HAWLEY, SUZANNE L. Transition Region Emission from Very Low Mass Stars. Suzanne L. Hawley & Christopher M. Johns-Krull. 588, L109 (2003)
- HAYANO, YUTAKA. See Goro, Miwa, et al. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae.
 - See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.
- HAYASHI, MASAHIKO. See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.
- HAYASHI, SAEKO S. Near-Infrared Imaging of Circumstellar Disk around Herbig Ae star HD 150193 A. Misato Fukagawa, Motohide Tamura, Yoichi Itoh, Saeko S. Hayashi, & Yumiko Oasa. 590, L49 (2003)
- HEAP, S. R. A Tale of Two Stars: The Extreme O7 Iaf+ Supergiant AV 83 and the OC7.5 III((f)) Star AV 69. D. John Hillier, T. Lanz, S. R. Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 588, 1039 (2003)
- HEIDT, J. Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)
- HEINDL, W. A. Extended Emission from Cygnus X-3 Detected with Chandra. W. A. Heindl, J. A. Tomsick, R. Wijnands, & D. M. Smith. 588, L97 (2003)

- HEINKE, C. O. X-Ray Studies of Two Neutron Stars in 47 Tucanae: Toward Constraints on the Equation of State. C. O. Heinke, J. E. Grindlay, D. A. Lloyd, & P. D. Edmonds. 588, 452 (2003)
- A Chandra X-Ray Study of the Dense Globular Cluster Terzan 5. C. O. Heinke, P. D. Edmonds, J. E. Grindlay, D. A. Lloyd, H. N. Cohn, & P. M. Lugger. 590, 809 (2003)
- HEITSCH, FABIAN. Suppression of Fast Reconnection by Magnetic Shear. Fabian Heitsch & Ellen G. Zweibel. 590, 291 (2003)
- HELD, ENRICO V. RR Lyrae and Short-Period Variable Stars in the Dwarf Irregular Galaxy NGC 6822. Gisella Clementini, Enrico V. Held, Lara Baldacci, & Luca Rizzi. 588, L85 (2003)
- Clues to the Evolution of the Carina Dwarf Spheroidal Galaxy from the Color Distribution of Its Red Giant Stars. Luca Rizzi, Enrico V. Held, Gianpaolo Bertelli, & Ivo Saviane. 589, L85 (2003)
- HELOU, G. The Bivariate Luminosity-Color Distribution of IRAS Galaxies and Implications for the High-Redshift Universe. S. C. Chapman, G. Helou, G. F. Lewis, & D. A. Dale. 588, 186 (2003)
- HELOU, GEORGE. See LU, NANYAO, et al. Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features.
- HENKEL, C. The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348. A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
- HENNING, TH. The First Detailed Look at a Brown Dwarf Disk. I. Pascucci, D. Apai, Th. Henning, & C. P. Dullemond. 590, L111 (2003)
- HENNING, THOMAS. Magnetic Star-Disk Coupling in Classical T Tauri Systems. Manfred Küker, Thomas Henning, & Günther Rüdiger. 589, 397 (2003)
- HENRY, GREGORY W. A Sub-Saturn Mass Planet Orbiting HD 3651. Debra A. Fischer, R. Paul Butler, Geoffrey W. Marcy, Steven S. Vogt, & Gregory W. Henry. 590, 1081 (2003)
- HENRY, J. P. See VIKHLININ, A., et al. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$.
- HERMSEN, W. See MEREGHETTI, S., et al. *Integral* and *XMM-Newton* Observations of the Weak Gamma-Ray Burst GRB 030227.
- HERRERO, ARTEMIO. The Remarkable Alternating Spectra of the Of?p Star HD 191612. Nolan R. Walborn, Ian D. Howarth, Artemio Herrero, & Daniel J. Lennon. 588, 1025 (2003)
- HERRNSTEIN, J. R. See GREENHILL, L. J., et al. A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy.
- HERTLING, G. Quasars Clustering at $z \approx 3$ on Scales $\lesssim 10h^{-1}$ Mpc. L. Infante, J. Varela, M. Moles, G. Hertling, A. García, & F. Menanteau. 588, 90 (2003)
- HERWIG, FALK. The Abundance Evolution of Oxygen, Sodium, and Magnesium in Extremely Metal-Poor Intermediate-Mass Stars: Implications for the Self-Pollution Scenario in Globular Clusters. Pavel A. Denissenkov & Falk Herwig. 590, L99 (2003)
- HESSMAN, F. V. See SCHAEFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
- HEYER, MARK H. See KRAEMER, KATHLEEN E., et al. Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study.
- HICKS, M. See TEEGARDEN, B. J., et al. Discovery of a New Nearby Star.
- HIGDON, J. C. The Superbubble Origin of ²²Ne in Cosmic Rays. J. C. Higdon & R. E. Lingenfelter. 590, 822 (2003)
- HILL, F. A Comparison of Low-Degree Solar p-Mode Parameters from BiSON and GONG: Underlying Values and Temporal Variations. R. Howe, W. J. Chaplin, Y. P. Elsworth, F. Hill, R. Komm, G. R. Isaak, & R. New. 588, 1204 (2003)
- HILL, G. J. See SCHAEFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
- HILL, ROBERT S. Emission-Line Galaxies in the STIS Parallel Survey. II. Star Formation Density. Harry I. Teplitz, Nicholas R. Collins, Jonathan P. Gardner, Robert S. Hill, & Jason Rhodes. 589, 704 (2003)
- HILL, VANESSA. See BARBUY, BEATRIZ, et al. Oxygen Abundance in the Template Halo Giant HD 122563.
- HILLENBRAND, L. A. Near-Infrared Interferometric Measurements of Herbig Ae/Be Stars. J. A. Eisner, B. F. Lane, R. L. Akeson, L. A. Hillenbrand, & A. I. Sargent. 588, 360 (2003)
- HILLENBRANDT, W. On the Small-Scale Stability of Thermonuclear Flames in Type Ia Supernovae. F. K. Roepke, J. C. Niemeyer, & W. Hillenbrandt. 588, 952 (2003)
- HILLIER, D. JOHN. A Tale of Two Stars: The Extreme O7 Iaf+ Supergiant AV 83 and the OC7.5 III((f)) Star AV 69. D. John Hillier, T. Lanz, S. R.

- Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 588, 1039 (2003)
- HINES, DEAN C. A Hubble Space Telescope/WFPC2 Snapshot Survey of 2MASS-selected Red QSOs. Andrew R. Marble, Dean C. Hines, Gary D. Schmidt, Paul S. Smith, Jason A. Surace, Lee Armus, Roc M. Cutri, & Brant O. Nelson. 590, 707 (2003)
- HIRANO, NAOMI. Interaction between the Outflow and the Core in IRAM 04191+1522. Shigehisa Takakuwa, Nagayoshi Ohashi, & Naomi Hirano. 590, 932 (2003)
- Ho, LUIS C. A Low-Mass Central Black Hole in the Bulgeless Seyfert I Galaxy NGC 4395. Alexei V. Filippenko & Luis C. Ho. 588, L13 (2003)
 - Detection of the "Active" Nucleus of M32. Luis C. Ho, Yuichi Terashima, & James S. Ulvestad. 589, 783 (2003)
- Ho, PAUL T. P. See TRINIDAD, MIGUEL A., et al. Observations of Water Masers and Radio Continuum Emission in AFGL 2591.
- Ho, WYNN C. G. Transfer of Polarized Radiation in Strongly Magnetized Plasmas and Thermal Emission from Magnetars: Effect of Vacuum Polarization. Dong Lai & Wynn C. G. Ho. 588, 962 (2003)
- Höflich, P. See Schaefer, Bradley E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
- HOFFMAN, C. M. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- HOFFMAN, JENNIFER L. Spectroscopic and Spectropolarimetric Observations of V838 Monocerotis. John P. Wisniewski, Nancy D. Morrison, Karen S. Bjorkman, Anatoly S. Miroshnichenko, Amanda C. Gault, Jennifer L. Hoffman, Marilyn R. Meade, & Jason M. Nett. 588, 486 (2003)
- HOFFMANN, WILLIAM F. See KRAEMER, KATHLEEN E., et al. Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study.
- HOFNER, P. Further Discoveries of ¹²CO in Low Surface Brightness Galaxies. K. O'Neil, E. Schinnerer, & P. Hofner. 588, 230 (2003)
- HOLDER, GILBERT P. External Shear in Quadruply Imaged Lens Systems. Gilbert P. Holder & Paul L. Schechter. 589, 688 (2003)
- HOLLIS, J. M. A Sensitive Very Large Array Search for Small-Scale Glycine Emission toward OMC-1. J. M. Hollis, J. A. Pedelty, L. E. Snyder, P. R. Jewell, F. J. Lovas, Patrick Palmer, & S.-Y. Liu. 588, 353 (2003)
- HOLMAN, MATTHEW J. The Geometry of Resonant Signatures in Debris Disks with Planets. Marc J. Kuchner & Matthew J. Holman. 588, 1110 (2003)
- HOLT, S. S. Chandra Observation of the X-Ray Source Population of NGC 6946. S. S. Holt, E. M. Schlegel, U. Hwang, & R. Petre. 588, 792 (2003)
- HOLTZMAN, J. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- HOLZER, THOMAS E. Two-dimensional Magnetohydrodynamic Models of the Solar Corona: Mass Loss from the Streamer Belt. Eirik Endeve, Egil Leer, & Thomas E. Holzer. 589, 1040 (2003)
- HOMAN, D. C. Jet Collimation in Action: Realignment on Kiloparsec Scales in 3C 279. D. C. Homan, M. L. Lister, K. I. Kllermann, M. H. Cohen, E. Ros, J. A. Zensus, M. Kadler, & R. C. Vermeulen. 589, L9 (2003)
- HOMAN, J. The Complete Z-Diagram of LMC X-2. A. P. Smale, J. Homan, & E. Kuulkers. 590, 1035 (2003)
- HONEIN, ALBERT. Thermal Conduction in Magnetized Turbulent Gas. Jungyeon Cho, A. Lazarian, Albert Honein, Bernard Knaepen, Stavros Kassinos, & Parviz Moin. 589, L77 (2003)
- HONG, SEUNG SOO. The Effect of Cosmic-Ray Diffusion on the Parker Instability. Dongsu Ryu, Jongsoo Kim, Seung Soo Hong, & T. W. Jones. 589, 338 (2003)
- HOOPER, ERIC J. See KURASZKIEWICZ, JOANNA K., et al. The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies.
- HOPMAN, CLOVIS. Orbital Inspiral into a Massive Black Hole in a Galactic Center. Tal Alexander & Clovis Hopman. 590, L29 (2003)
- HORA, JOSEPH L. See KRAEMER, KATHLEEN E., et al. Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study.
- HORNSTRUP, A. See VIKHLININ, A., et al. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$.
- HOWARD, R. A. Constraints on Coronal Mass Ejection Dynamics from Simultaneous Radio and White-Light Observations. M. J. Reiner, A. Vourlidas, O. C. St. Cyr, J. T. Burkepile, R. A. Howard, M. L. Kaiser, N. P. Prestage, & J.-L. Bougeret. 590, 533 (2003)
- HOWARTH, IAN D. The Remarkable Alternating Spectra of the Of?p Star HD 191612. Nolan R. Walborn, Ian D. Howarth, Artemio Herrero, & Daniel J. Lennon. 588, 1025 (2003)
- Howe, R. A Comparison of Low-Degree Solar p-Mode Parameters from BiSON and GONG: Underlying Values and Temporal Variations.

- R. Howe, W. J. Chaplin, Y. P. Elsworth, F. Hill, R. Komm, G. R. Isaak, & R. New, 588, 1204 (2003)
- HRIVNAK, BRUCE J. An Abundance Analysis of the New Carbon-Rich Proto-Planetary Nebula IRAS 06530-0213. Bruce J. Hrivnak & Bacham E. Reddy. 590, 1049 (2003)
- HUBBARD, W. B. On the Indirect Detection of Sodium in the Atmosphere of the Planetary Companion to HD 209458. J. J. Fortney, D. Sudarsky, I. Hubeny, C. S. Cooper, W. B. Hubbard, A. Burrows, & J. I. Lunine. 589, 615 (2003)
- HUBENY, I. A Tale of Two Stars: The Extreme O7 Iaf+ Supergiant AV 83 and the OC7.5 III((f)) Star AV 69. D. John Hillier, T. Lanz, S. R. Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 588, 1039 (2003)
- On the Indirect Detection of Sodium in the Atmosphere of the Planetary Companion to HD 209458. J. J. Fortney, D. Sudarsky, I. Hubeny, C. S. Cooper, W. B. Hubbard, A. Burrows, & J. I. Lunine. 589, 615 (2003)
- HUBENY, IVAN. Theoretical Spectra and Atmospheres of Extrasolar Giant Planets. David Sudarsky, Adam Burrows, & Ivan Hubeny. 588, 1121 (2003)
- HUGENBERGER, S. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- HUGHES, DAVID H. See KURASZKIEWICZ, JOANNA K., et al. The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies.
- HUGHES, JOHN P. The Physics of Supernova Blast Waves. I. Kinematics of DEM L71 in the Large Magellanic Cloud. Parviz Ghavamian, Cara E. Rakowski, John P. Hughes, & T. B. Williams. 590, 833 (2003)
- The Physics of Supernova Remnant Blast Waves. II. Electron-Ion Equilibration in DEM L71 in the Large Magellanic Cloud. Cara E. Rakowski, Parviz Ghavamian, & John P. Hughes. 590, 846 (2003)
- HUI, LAM. Inferring the Linear Power Spectrum from the Lyα Forest. Matias Zaldarriaga, Román Scoccimarro, & Lam Hui. 590, 1 (2003)
- HUNT, LESLIE K. New Light on the Stellar Populations in I Zw 18: Deep Near-Infrared Imaging. Leslie K. Hunt, Trinh X. Thuan, & Yuri I. Izotov. 588, 281 (2003)
- The Relation between Black Hole Mass, Bulge Mass, and Near-Infrared Luminosity. Alessandro Marconi & Leslie K. Hunt. 589, L21 (2003)
- HURLEY, JARROD R. White Dwarf Sequences in Dense Star Clusters. Jarrod R. Hurley & Michael M. Shara. 589, 179 (2003)
- HURLEY, K. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- Huss, G. R. The Initial Abundance of ⁶⁰Fe in the Solar System. S. Tachibana & G. R. Huss. 588, L41 (2003)
- HUT, PIET. A Dynamical Model for the Globular Cluster G1. Holger Baumgardt, Junichiro Makino, Piet Hut, Steve McMillan, & Simon Portegies Zwart. 589, L25 (2003)
- HWANG, U. Chandra Observation of the X-Ray Source Population of NGC 6946. S. S. Holt, E. M. Schlegel, U. Hwang, & R. Petre. 588, 792 (2003)
- HYNES, R. I. Bowen Flourescence from the Companion Star in X1822-371.
 J. Casares, D. Steeghs, R. I. Hynes, P. A. Charles, & K. O'Brien. 590, 1041 (2003)
- IKEDA, MASAFUMI. See KAMEGAI, KAZUHISA, et al. Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud.
- IKUTA, CHISATO. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
- ILLINGWORTH, GARTH. Cl 1358+62: Characterizing the Physical Properties of Cluster Galaxies at z = 0.33. Kim-Vy H. Tran, Luc Simard, Garth Illingworth, & Marijn Franx. 590, 238 (2003)
- ILLINGWORTH, GARTH D. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field-North with the Advanced Camera for Surveys.
- IMAI, HIROSHI. The Three-dimensional Kinematics of Water Masers around the Semiregular Variable RT Virginis. Hiroshi Imai, Katsunori M. Shibata, Kevin B. Marvel, Philip J. Diamond, Tetsuo Sasao, Makoto Miyoshi, Makoto Inoue, Victor Migenes, & Yasuhiro Murata. 590, 460 (2003)
- IMANISHI, MASATOSHI. 3.1 Micron H₂O Ice Absorption in LINER-Type Ultraluminous Infrared Galaxies with Cool Far-Infrared Colors: The Centrally Concentrated Nature of Their Deeply Buried Energy Sources. Masatoshi Imanishi & Philip R. Maloney. 588, 165 (2003)
 - See Iye, Masanori, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim$ 1.5.

- IMI, KATSUMI. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
- IMPEY, CHRIS D. See KURASZKIEWICZ, JOANNA K., et al. The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies.
- INATANI, JUNJI. See KAMEGAI, KAZUHISA, et al. Distribution of the C $\rm I$ Emission in the ρ Ophiuchi Dark Cloud.
- INFANTE, L. Quasars Clustering at $z\approx 3$ on Scales $\lesssim 10h^{-1}$ Mpc. L. Infante, J. Varela, M. Moles, G. Hertling, A. García, & F. Menanteau. 588, 90 (2003)
- INOUE, MAKOTO. See IMAI, HIROSHI, et al. The Three-dimensional Kinematics of Water Masers around the Semiregular Variable RT Virginis.
- IRWIN, ALAN W. The Initial Helium Content of Galactic Globular Cluster Stars from the R-Parameter: Comparison with the Cosmic Microwave Background Constraint. Santi Cassisi, Maurizio Salaris, & Alan W. Irwin. 588, 862 (2003)
- ISAAK, G. R. A Comparison of Low-Degree Solar p-Mode Parameters from BiSON and GONG: Underlying Values and Temporal Variations. R. Howe, W. J. Chaplin, Y. P. Elsworth, F. Hill, R. Komm, G. R. Isaak, & R. New. 588, 1204 (2003)
- ISHIGURO, M. Discovery of Dust Trail of STARDUST Comet Sample Return Mission Target: 81P/Wild 2. M. Ishiguro, S. M. Kwon, Y. Sarugaku, S. Hasegawa, F. Usui, S. Nishiura, Y. Nakada, & H. Yano. 589, L101 (2003)
- ISHIGURO, MASATERU. Saturated Hydrocarbons in Comet 153P/Ikeya-Zhang: Ethane, Methane, and Monodeuterio-Methane. Hideyo Kawakita, Jun-ichi Watanabe, Daisuke Kinoshita, Masateru Ishiguro, & Ryosuke Nakamura. 590, 573 (2003)
- ISOBE, TAKASHI. Chandra Observations of Associates of η Carinae. I. Luminosities. Nancy Remage Evans, Frederick D. Seward, Miriam I. Krauss, Takashi Isobe, Joy Nichols, Eric M. Schlegel, & Scott J. Wolk. 589, 509 (2003)
- ISRAEL, G. L. The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849-400910. G. L. Israel, S. Covino, R. Perna, R. Mignani, L. Stella, S. Campana, G. Marconi, G. Bono, S. Mereghetti, C. Motch, I. Negueruela, T. Oosterbroek, & L. Angelini. 589, L93 (2003)
- ITO, TETSUYA. See KAMEGAI, KAZUHISA, et al. Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud.
- ITOH, YOICHI. Near-Infrared Imaging of Circumstellar Disk around Herbig Ae star HD 150193 A. Misato Fukagawa, Motohide Tamura, Yoichi Itoh, Saeko S. Hayashi, & Yumiko Oasa. 590, L49 (2003)
- IVEZIC, ŽELJKO. See YANNY, BRIAN, et al. A Low-Latitude Halo Stream around the Milky Way.
- IVISON, R. J. Variability of Submillijansky Radio Sources. C. L. Carilli, R. J. Ivison, & D. A. Frail. 590, 192 (2003)
- IWAMURO, FUMIHIDE. See IYE, MASANORI, et al. ERO R1 in the Field of C1 0939+4713: Evidence for an S0-Like Galaxy at $z\sim1.5$.
- IWATA, MITSUHIRO. See KAMEGAI, KAZUHISA, et al. Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud.
- IYE, MASANORI. See Goto, Miwa, et al. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto–Planetary Nebulae.
 - See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.
- ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at z ~ 1.5. Masanori Iye, Kazuhiro Shimasaku, Satoshi Miyazaki, Chris Simpson, Masatoshi Imanishi, Nabunari Kashikawa, Takayuki Kodama, Masashi Chiba, Yoshihiko Saito, Miwa Goto, Fumihide Iwamuro, Naoto Kobayashi, Sadanori Okamura, & Hiroshi Terada. 590, 770 (2003)
- IZOTOV, YURI I. New Light on the Stellar Populations in I Zw 18: Deep Near-Infrared Imaging. Leslie K. Hunt, Trinh X. Thuan, & Yuri I. Izotov. 588, 281 (2003)
- JACKSON, JAMES M. See KRAEMER, KATHLEEN E., et al. Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study.
- JACOBY, B. A. The Nearby Neutron Star RX J0720.4—3125 from Radio to X-Rays. D. L. Kaplan, M. H. van Kerkwijk, H. L. Marshall, B. A. Jacoby, S. R. Kulkarni, & D. A. Frail. 590, 1008 (2003)
- JÄGER, K. Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)
- JANIUK, AGNIESZKA. See BECHTOLD, JILL, et al. Chandra Survey of Radio-quiet, High-Redshift Quasars.

- JANKA, HANS-THOMAS. Monte Carlo Study of Supernova Neutrino Spectra Formation. Mathias Th. Keil, Georg G. Raffelt, & Hans-Thomas Janka. 590, 971 (2003)
- JANNUZI, BUELL T. The Nature of the Ultraviolet/X-Ray Absorber in PG 2302+029. Bassem M. Sabra, Fred Hamann, Buell T. Jannuzi, Ian M. George, & Joseph C. Shields. 590, 66 (2003)
- JARRETT, THOMAS H. See LU, NANYAO, et al. Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features.
- JAUNCEY, D. L. See GREENHILL, L. J., et al. A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy.
- JEFFRIES, R.D. Chandra Observations of the Young Open Cluster NGC 2516.
 F. Damiani, E. Flaccomio, G. Micela, S. Sciortino, F.R. Harnden, Jr., S.S.
 Murray, S.J. Wolk, & R.D. Jeffries. 588, 1009 (2003)
- JENSEN, J. B. A Major Soft Gamma Repeater-like Outburst and Rotation Glitch in the No-longer-so-anomalous X-Ray Pulsar 1E 2259+586. V. M. Kaspi, F. P. Gavriil, P. M. Woods, J. B. Jensen, M. S. E. Roberts, & D. Chakrabarty. 588, L93 (2003)
- JERJEN, H. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- JERNIGAN, J. G. High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)
- JEWELL, P. R. A Sensitive Very Large Array Search for Small-Scale Glycine Emission toward OMC-1. J. M. Hollis, J. A. Pedelty, L. E. Snyder, P. R. Jewell, F. J. Lovas, Patrick Palmer, & S.-Y. Liu. 588, 353 (2003)
- A Polarization Survey of SiO Maser Variability in Evolved Stars. J. Glenn, P. R. Jewell, R. Fourre, & L. Miaja. 588, 478 (2003)
- JIMENEZ-GARATE, M. A. Discrete X-Ray Signatures of a Photoionized Plasma above the Accretion Disk of the Neutron Star EXO 0748-676. M. A. Jimenez-Garate, N. S. Schulz, & H. L. Marshall. 590, 432 (2003)
- JING, Y. P. Spatial and Dynamical Biases in Velocity Statistics of Galaxies. Kohji Yoshikawa, Y. P. Jing, & Gerhard Börner. 590, 654 (2003)
- JOHNS-KRULL, CHRISTOPHER M. Transition Region Emission from Very Low Mass Stars. Suzanne L. Hawley & Christopher M. Johns-Krull. 588, L109 (2003)
- JOHNSTON, SIMON. Giant Pulses from PSR B0540-69 in the Large Magellanic Cloud. Simon Johnston & Roger W. Romani. 590, L95 (2003)
- JOHNSTONE, DOUG. The G11.11-0.12 Infrared-dark Cloud: Anomalous Dust and a Nonmagnetic Isothermal Model. *Doug Johnstone, Jason D. Fiege*, R. O. Redman, P. A. Feldman, & Sean J. Carey. 588, L37 (2003)
- Jones, C. See Vikhlinin, A., et al. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$.
- XMM-Newton Observations of the Perseus Cluster. I. The Temperature and Surface Brightness Structure. E. Churazov, W. Forman, C. Jones, & H. Boehringer. 590, 225 (2003)
- JONES, HARRISON P. Comparison of Total Solar Irradiance with NASA/National Solar Observatory Spectromagnetograph Data in Solar Cycles 22 and 23. Harrison P. Jones, Detrick D. Branston, Patricia B. Jones, & Miruna D. Popescu. 589, 658 (2003)
- JONES, PATRICIA B. Comparison of Total Solar Irradiance with NASA/National Solar Observatory Spectromagnetograph Data in Solar Cycles 22 and 23. Harrison P. Jones, Detrick D. Branston, Patricia B. Jones, & Miruna D. Popescu. 589, 658 (2003)
- JONES, T. W. The Effect of Cosmic-Ray Diffusion on the Parker Instability. Dongsu Ryu, Jongsoo Kim, Seung Soo Hong, & T. W. Jones. 589, 338 (2003)
- JUVELA, MIKA. The Spectral Correlation Function of Molecular Clouds: A Statistical Test for Theoretical Models. Paolo Padoan, Alyssa A. Goodman, & Mika Juvela. 588, 881 (2003)
- KAASTRA, J. S. High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)
- KAASTRA, JELLE. Contrasting the Ultraviolet and X-Ray O vi Column Density Inferred for the Outflow in NGC 5548. Nahum Arav, Jelle Kaastra, Katrien Steenbrugge, Bert Brinkman, Rick Edelson, Kirk T. Korista, & Martiin de Kool. 590, 174 (2003)
- KADLER, M. Jet Collimation in Action: Realignment on Kiloparsec Scales in 3C 279. D. C. Homan, M. L. Lister, K. I. Kllermann, M. H. Cohen, E. Ros, J. A. Zensus, M. Kadler, & R. C. Vermeulen. 589, L9 (2003)

- KAHN, S. M. High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)
- Emission-Line Spectra of Ar IX-Ar XVI in the Soft X-Ray Region 20-50 Å. J. K. Lepson, P. Beiersdorfer, E. Behar, & S. M. Kahn. 590, 604 (2003)
- KAISER, M. L. Constraints on Coronal Mass Ejection Dynamics from Simultaneous Radio and White-Light Observations. M. J. Reiner, A. Vourlidas, O. C. St. Cyr, J. T. Burkepile, R. A. Howard, M. L. Kaiser, N. P. Prestage, & J.-L. Bougeret. 590, 533 (2003)
- KALBERLA, P. M. W. Dark Matter in the Milky Way. I. The Isothermal Disk Approximation. P. M. W. Kalberla. 588, 805 (2003)
- Камата, Yukiko. See Goto, Miwa, et al. Spatially Resolved 3 Micron
 Spectroscopy of IRAS 22272+5435: Formation and Evolution of
 Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae.
 - See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.
- KAMEGAI, KAZUHISA. Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud. Kazuhisa Kamegai, Masafumi Ikeda, Hiroyuki Maezawa, Tetsuya Ito, Mitsuhiro Iwata, Takeshi Sakai, Tomoharu Oka, Satoshi Yamamoto, Yutaro Sekimoto, Ken'ichi Tatematsu, Takashi Noguchi, Shuji Saito, Hideo Fujiwara, Hiroyuki Ozeki, Junji Inatani, & Masatoshi Ohishi. 589, 378 (2003)
- KANO, RYOUHEI. See NAGATA, SHIN'ICHI, et al. Spatial and Temporal Properties of Hot and Cool Coronal Loops.
- KANZAWA, TOMIO. See GOTO, MIWA, et al. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae.
- KAPLAN, D. L. The Optical Counterpart of the Isolated Neutron Star RX J1605.3+3249. D. L. Kaplan, S. R. Kulkarni, & M. H. van Kerkwijk. 588, L33 (2003)
- The Nearby Neutron Star RX J0720.4—3125 from Radio to X-Rays. D. L. Kaplan, M. H. van Kerkwijk, H. L. Marshall, B. A. Jacoby, S. R. Kulkarni, & D. A. Frail. 590, 1008 (2003)
- KAROVSKA, MARGARITA. Theoretical Limb Darkening for Classical Cepheids. II. Corrections for the Geometric Baade-Wesselink Method. Massimo Marengo, Margarita Karovska, Dimitar D. Sasselov, Costas Papaliolios, John T. Armstrong, & Tyler E. Nordgren. 589, 968 (2003)
- KARPEN, J. T. Constraints on Active Region Coronal Heating. S. K. Antiochos, J. T. Karpen, E. E. DeLuca, L. Golub, & P. Hamilton. 590, 547 (2003)
- KASDIN, N. JEREMY. Spiderweb Masks for High-Contrast Imaging. Robert J. Vanderbei, David N. Spergel, & N. Jeremy Kasdin. 590, 593 (2003)
- KASHIKAWA, NABUNARI. See IYE, MASANORI, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim1.5$.
- KASPI, V. M. XMM-Newton Observations of PSR B1823—13: An Asymmetric Synchrotron Nebula around a Vela-like Pulsar. B. M. Gaensler, N. S. Schulz, V. M. Kaspi, M. J. Pivovaroff, & W. E. Becker. 588, 441 (2003)
- A Major Soft Gamma Repeater-like Outburst and Rotation Glitch in the No-longer-so-anomalous X-Ray Pulsar IE 2259+586. V. M. Kaspi, F. P. Gavriil, P. M. Woods, J. B. Jensen, M. S. E. Roberts, & D. Chakrabarty. 588, L93 (2003)
- KASPI, VICTORIA M. The Pulsar Wind Nebula in G11.2-0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)
- KASSINOS, STAVROS. Thermal Conduction in Magnetized Turbulent Gas. Jungyeon Cho, A. Lazarian, Albert Honein, Bernard Knaepen, Stavros Kassinos, & Parviz Moin. 589, L77 (2003)
- KASSIS, MARC. See KRAEMER, KATHLEEN E., et al. Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study.
- KASTNER, JOEL H. Abundance Anomalies in the X-Ray Spectra of Planetary Nebulae NGC 7027 and BD +30°3639. Holly L. Maness, Saeqa D. Vrtilek, Joel H. Kastner, & Noam Soker. 589, 439 (2003)
- Refining Chandral ACIS Subpixel Event Repositioning Using a Backsideilluminated CCD Model. Jingqiang Li, Joel H. Kastner, Gregory Y. Prigozhin, & Norbert S. Schulz. 590, 586 (2003)
- KATO, MARIKO. A New Clue to the Transition Mechanism between Optical High and Low States of the Supersoft X-Ray Source RX J0513.9—6951, Implied from the Recurrent Nova CI Aquilae 2000 Outburst Model. *Izumi Hachisu & Mariko Kato*. 588, 1003 (2003)
 - RX J0513.9-6951: The First Example of Accretion Wind Evolution, a Key Evolutionary Process to Type Ia Supernovae. *Izumi Hachisu & Mariko Kato.* 590, 445 (2003)

- KAUL, C. L. A Continuous Injection Plasma Model for the X-Ray/Radio Knots in Kiloparsec-Scale Jets of Active Galactic Nuclei. S. Sahayanathan, R. Misra, A. K. Kembhavi, & C. L. Kaul. 588, L77 (2003)
- KAWAI, NOBUYUKI. The Pulsar Wind Nebula in G11.2—0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)
- KAWAKITA, HIDEYO. Saturated Hydrocarbons in Comet 153P/Ikeya-Zhang: Ethane, Methane, and Monodeuterio-Methane. Hideyo Kawakita, Jun-ichi Watanabe, Daisuke Kinoshita, Masateru Ishiguro, & Ryosuke Nakamura, 590, 573 (2003)
- KAYO, ISSHA. Evolution of the Cosmological Density Distribution Function from the Local Collapse Model. Yasuhiro Ohta, Issha Kayo, & Atsushi Taruya, 589, 1 (2003)
- KAZANAS, DEMOSTHENES. Relativistic and Slowing Down: The Flow in the Hot Spots of Powerful Radio Galaxies and Quasars. Markos Georganopoulos & Demosthenes Kazanas. 589, L5 (2003)
- KEETON, CHARLES R. The Quintuple Quasar: Radio and Optical Observations. Joshua N. Winn, Christopher S. Kochanek, Charles R. Keeton, & James E. J. Lovell. 590, 26 (2003)
- The Quintuple Quasar: Mass Models and Interpretation. *Charles R. Keeton & Joshua N. Winn.* 590, 39 (2003)
- KEIL, MATHIAS TH. Monte Carlo Study of Supernova Neutrino Spectra Formation. Mathias Th. Keil, Georg G. Raffelt, & Hans-Thomas Janka. 590, 971 (2003)
- KEIM, NATHAN C. Radio Polarization of the Young High-Magnetic-Field Pulsar PSR J1119-6127. Fronefield Crawford & Nathan C. Keim. 590, 1020 (2003)
- KELLEY, L. A. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- KEMBHAVI, A. K. A Continuous Injection Plasma Model for the X-Ray/Radio Knots in Kiloparsec-Scale Jets of Active Galactic Nuclei. S. Sahayanathan, R. Misra, A. K. Kembhavi, & C. L. Kaul. 588, L77 (2003)
- KENT, STEVE. See YANNY, BRIAN, et al. A Low-Latitude Halo Stream around the Milky Way.
- KEWLEY, L. See WANG, J., et al. A Puzzling X-Ray Source Found in the Chandra Deep Field–South.
- KHOMENKO, E. V. Magnetoacoustic Waves in Sunspots. E. V. Khomenko, M. Collados, & L. R. Bellot Rubio. 588, 606 (2003)
- KIM, EUN-JIN. Gravity Wave-driven Flows in the Solar Tachocline. II. Stationary Flows. Eun-jin Kim & K. B. MacGregor. 588, 645 (2003)
- KIM, JONGSOO. The Effect of Cosmic-Ray Diffusion on the Parker Instability. Dongsu Ryu, Jongsoo Kim. Seung Soo Hong, & T. W. Jones. 589, 338 (2003)
- KIMBLE, R. A. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- KIMBLE, RANDY. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- KIMURA, MASAHIKO. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
- KINOSHITA, DAISUKE. Saturated Hydrocarbons in Comet 153P/Ikeya-Zhang: Ethane, Methane, and Monodeuterio-Methane. Hideyo Kawakita, Jun-ichi Watanabe. Daisuke Kinoshita, Masateru Ishiguro, & Ryosuke Nakamura, 590, 573 (2003)
- KITAYAMA, TETSU. Mass-Temperature Relation of Galaxy Clusters: Implication from the Observed Luminosity-Temperature Relation and X-Ray Temperature Function. Mamoru Shimizu, Tetsu Kitayama, Shin Sasaki, & Tasushi Suto. 590, 197 (2003)
- KITZBICHLER, MANFRED. Detection of Nonrandom Galaxy Orientations in X-Ray Subclusters of the Coma Cluster. Manfred Kitzbichler & W. Saurer. 590, L9 (2003)
- KLEIN-WOLT, MARC. Hard X-Ray Flares Preceding Soft X-Ray Outbursts in Aquila X-1: A Link between Neutron Star and Black Hole Transitions. Wenfei Yu, Marc Klein-Wolt, Rob Fender, & Michiel van der Klis. 589, L33 (2003)
- KLESSEN, RALF S. Draco: A Failure of the Tidal Model. Ralf S. Klessen, Eva K. Grebel, & Daniel Harbeck. 589, 798 (2003)
- KLEYNA, JAN T. A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy. Jan T. Kleyna, Mark I. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 588, L21 (2003)

- A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy: Erratum (ApJ, 588, L21 [2003]). Jan T. Kleyna, Mark I. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 589, L59 (2003) (Orig. paper in 588, L21 (2003))
- KLLERMANN, K. I. Jet Collimation in Action: Realignment on Kiloparsec Scales in 3C 279. D. C. Homan, M. L. Lister, K. I. Kllermann, M. H. Cohen, E. Ros, J. A. Zensus, M. Kadler, & R. C. Vermeulen. 589, L9 (2003)
- KNAEPEN, BERNARD. Thermal Conduction in Magnetized Turbulent Gas. Jungyeon Cho, A. Lazarian, Albert Honein, Bernard Knaepen, Stavros Kassinos, & Parviz Moin. 589, L77 (2003)
- KNEIB, JEAN-PAUL. Measuring σ₈ with Cluster Lensing: Biases from Unrelaxed Clusters. Graham P. Smith, Alastair C. Edge, Vincent R. Eke, Robert C. Nichol, Ian Smail, & Jean-Paul Kneib. 590, L79 (2003)
- KNELLER, J. P. Testing Two Nuclear Physics Approximations Used in the Standard Leaky-Box Model for the Spallogenic Production of LiBeB. J. P. Kneller, J. R. Phillips, & T. P. Walker. 589, 217 (2003)
- KNOX, LLOYD. The Far-Infrared Background Correlation with Cosmic Microwave Background Lensing. Yong-Seon Song, Asantha Cooray, Lloyd Knox, & Matias Zaldarriaga. 590, 664 (2003)
- KOBAYASHI, KEN. See NAGATA, SHIN'ICHI, et al. Spatial and Temporal Properties of Hot and Cool Coronal Loops.
- KOBAYASHI, NAOTO. See GOTO, MIWA, et al. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae.
 - See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.
 - See Iye, Masanori, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim1.5$.
- KOBAYASHI, SHIHO. Gravitational Radiation from Gamma-Ray Burst Progenitors. Shiho Kobayashi & Peter Mészáros. 589, 861 (2003)
- KOCHANEK, CHRISTOPHER S. The Quintuple Quasar: Radio and Optical Observations. Joshua N. Winn, Christopher S. Kochanek, Charles R. Keeton, & James E. J. Lovell. 590, 26 (2003)
- KODAMA, TAKAYUKI. See IYE, MASANORI, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim1.5$.
- KOESTER, D. High-Resolution Spectroscopy of the Pulsating White Dwarf G29-38. Susan E. Thompson, J. C. Clemens, M. H. van Kerkwijk, & D. Koester. 589, 921 (2003)
- KOMIYAMA, YUTAKA. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822. Yutaka Komiyama, Sadanori Okamura, Masafumi Yagi, Hisanori Furusawa, Mamoru Doi, Masaru Hamabe, Katsumi Imi, Masahiko Kimura, Satoshi Miyazaki, Fumiaki Nakata, Norio Okada, Masami Ouchi, Maki Sekiguchi, Kazuhiro Shimasaku, Naoki Yasuda, Nobuo Arimoto, & Chisato Ikuta. 590, L17 (2003)
- KOMM, R. A Comparison of Low-Degree Solar p-Mode Parameters from BiSON and GONG: Underlying Values and Temporal Variations. R. Howe, W. J. Chaplin, Y. P. Elsworth, F. Hill, R. Komm, G. R. Isaak, & R. New. 588, 1204 (2003)
- KOMOSSA, STEFANIE. An Active Galactic Nucleus Sample with High X-Ray-to-Optical Flux Ratio from RASS. II. Optical Emission Line Properties of Seyfert 1 Type Active Galactic Nuclei. D. W. Xu. Stefanie Komossa, J. Y. Wei, Y. Qian, & X. Z. Zheng. 590, 73 (2003)
- KOMP, WILLIAM. Cosmological Acceleration through Transition to Constant Scalar Curvature. Leonard Parker, William Komp. & Daniel A. T. Vanzella. 588, 663 (2003)
- KONACKI, MACIEJ. Geodetic Precession and Timing of the Relativistic Binary Pulsars PSR B1534+12 and PSR 1913+16. Maciej Konacki, Alex Wolszczan, & Ingrid H. Stairs. 589, 495 (2003)
- KONG, ALBERT. A Luminous Recurrent Supersoft X-Ray Source in NGC 300. Albert Kong & R. DiStefano. 590, L13 (2003)
- Discovery of Radio/X-Ray/Optical Resolved Supernova Remnants in the Center of the Andromeda Galaxy. Albert Kong, L. O. Sjouwerman, B. F. Williams, M. R. Garcia, & J. R. Dickel. 590, L21 (2003)
- KORCHAGIN, VLADIMIR I. A Capture Scenario for Globular Cluster ω Centauri. Toshio Tsuchiya, Dana I. Dinescu, & Vladimir I. Korchagin. 589, L29 (2003)
- KORISTA, KIRK T. Contrasting the Ultraviolet and X-Ray O vi Column Density Inferred for the Outflow in NGC 5548. Nahum Arav, Jelle Kaastra, Katrien Steenbrugge, Bert Brinkman, Rick Edelson, Kirk T. Korista, & Martijn de Kool. 590, 174 (2003)

- KOSOVICHEV, A. G. Optimal Masks for Solar g-Mode Detection. R. Wachter, J. Schou, A. G. Kosovichev, & P. H. Scherrer. 588, 1199 (2003)
- KOTHES, ROLAND. The Distance to the Supernova Remnant CTB 87 and the Radial Velocity of the Perseus Arm toward l = 75°, Derived from H 1 and CO Observations. Roland Kothes, Wolfgang Reich, Tyler Foster, & Do-Young Byun. 588, 852 (2003)
- KOUCHI, AKIRA. Dependence of H₂CO and CH₃OH Formation on Temperature and Thickness of H₂O-CO Ice during the Successive Hydrogenation of CO. Naoki Watanabe, Takahiro Shiraki, & Akira Kouchi. 588, L121 (2003)
- KOYAMA, KATSUJI. Chandra Observations of a Nonthermal Supernova Remnant Candidate AX J1843.8—0352 and Its Surroundings. Masaru Ueno, Aya Bamba, Katsuji Koyama, & Ken Ebisawa. 588, 338 (2003)
- Diffuse Hard X-Ray Sources Discovered with the ASCA Galactic Plane Survey. Aya Bamba, Masaru Ueno, Katsuji Koyama, & Shigeo Yamauchi. 589, 253 (2003)
- Small-Scale Structure of the SN 1006 Shock with Chandra Observations. Aya Bamba, Ryo Yamazaki, Masaru Ueno, & Katsuji Koyama. 589, 827 (2003)
- KOZYREV, A. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- KRAEMER, KATHLEEN E. Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study. Kathleen E. Kraemer, James M. Jackson, Marc Kassis, Lynne K. Deutsch, Joseph L. Hora, Robert Simon, William F. Hoffmann, G. G. Fazio, Aditya Dayal, T. M. Bania, Dan P. Clemens, & Mark H. Heyer. 588, 918 (2003)
- KRASNOPOLSKY, RUBEN. Locating the Launching Region of T Tauri Winds: The Case of DG Tauri. Jeffrey M. Anderson, Zhi-Yun Li, Ruben Krasnopolsky, & Roger D. Blandford. 590, L107 (2003)
- KRAUS, U. X-Ray Pulses from Accretion Columns: Contributions to the Energy Dependence of the Pulse Shape. U. Kraus, C. Zahn, C. Weth, & H. Ruder. 590, 424 (2003)
- KRAUSS, MIRIAM I. Chandra Observations of Associates of η Carinae. I. Luminosities. Nancy Remage Evans, Frederick D. Seward, Miriam I. Krauss, Takashi Isobe, Joy Nichols, Eric M. Schlegel, & Scott J. Wolk. 589, 509 (2003)
- KRAVTSOV, ANDREY V. On the Origin of the Global Schmidt Law of Star Formation. Andrey V. Kravtsov. 590, L1 (2003)
- KRIMIGIS, S. M. Evidence for a Suprathermal Seed Population of Heavy Ions Accelerated by Interplanetary Shocks near 1 AU. M. I. Desai, G. M. Mason, J. R. Dwyer, J. E. Mazur, R. E. Gold, S. M. Krimigis, C. W. Smith, & R. M. Skoug. 588, 1149 (2003)
- KRIST, JOHN. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type la Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- KRIST, JOHN E. Hubble Space Telescope WFPC2 Imaging of the Disk and Jet of HV Tauri C. Karl R. Stapelfeldt, François Ménard, Alan M. Watson, John E. Krist, Catherine Dougados, Deborah L. Padgett, & Wolfgang Brandner, 589, 410 (2003)
- KRONGOLD, Y. See STEPANIAN, J. A., et al. A Multiwavelength Study of Narrow-Line Seyfert 1 Galaxies from the Second Byurakan Survey.
- KUCHNER, MARC J. The Geometry of Resonant Signatures in Debris Disks with Planets. Marc J. Kuchner & Matthew J. Holman. 588, 1110 (2003)
- KÜKER, MANFRED. Magnetic Star-Disk Coupling in Classical T Tauri Systems. Manfred Küker, Thomas Henning, & Günther Rüdiger. 589, 397 (2003)
- KULESA, CRAIG. CO Emission from Disks around AB Aurigae and HD 141569: Implications for Disk Structure and Planet Formation Timescales. Sean D. Brittain, Terrence W. Rettig, Theodore Simon, Craig Kulesa, Michael A. DiSanti, & Neil Dello Russo. 588, 535 (2003)
- KULKARNI, S. R. A Submillimeter and Radio Survey of Gamma-Ray Burst Host Galaxies: A Glimpse into the Future of Star Formation Studies. E. Berger, L. L. Cowie, S. R. Kulkarni, D. A. Frail, H. Aussel, & A. J. Barger, 588, 99 (2003)
- The Optical Counterpart of the Isolated Neutron Star RX J1605.3+3249.

 D. L. Kaplan, S. R. Kulkarni, & M. H. van Kerkwijk. 588, L33 (2003)
- See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- A Standard Kinetic Energy Reservoir in Gamma-Ray Burst Afterglows.
 E. Berger, S. R. Kulkarni, & D. A. Frail. 590, 379 (2003)
 See Frail., D. A., et al. The Broadband Afterglow of GRB 980703.
- The Nearby Neutron Star RX J0720.4—3125 from Radio to X-Rays. D. L. Kaplan, M. H. van Kerkwijk, H. L. Marshall, B. A. Jacoby, S. R. Kulkarni, & D. A. Frail. 590, 1008 (2003)

- KUMAR, P. See SCHAIFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
- KUNDIĆ, TOMISLAV. Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)
- KUNDU, ARUNAV. Some Constraints on the Effects of Age and Metallicity on the Low-Mass X-Ray Binary Formation Rate. Arunav Kundu, Thomas J. Maccarone, Stephen E. Zepf, & Thomas H. Puzia. 589, L81 (2003)
- KUNDU, M. R. Quasi-periodic Pulsations in a Solar Microwave Burst. V. V. Grechnev, S. M. White, & M. R. Kundu. 588, 1163 (2003)
- KUNO, NARIO. A Multitransition CO Study of the Antennae Galaxies NGC 4038/9. Ming Zhu, E. R. Seaquist, & Nario Kuno. 588, 243 (2003) CO Molecular Gas in Infrared-luminous Galaxies. Lihong Yao, E. R. Seaquist, Nario Kuno, & Loretta Dunne. 588, 771 (2003)
- KUNTZ, K. D. Diffuse X-Ray Emission from M101. K. D. Kuntz, S. L. Snowden, W. D. Pence, & K. Mukai. 588, 264 (2003)
- KURASZKIEWICZ, JOANNA K. The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies. Joanna K. Kuraszkiewicz, Belinda J. Wilkes, Eric J. Hooper, Kim K. McLeod, Kenneth Wood, Jon Bjorkman, Kisha M. Delain, David H. Hughes, Martin S. Elvis, Chris D. Impey, Carol J. Lonsdale, Matt A. Malkan, Jonathan C. McDowell, & Barbara Whitney. 590, 128 (2003)
- KUULKERS, E. The Complete Z-Diagram of LMC X-2. A. P. Smale, J. Homan, & E. Kuulkers. 590, 1035 (2003)
- KWON, S. M. Discovery of Dust Trail of STARDUST Comet Sample Return Mission Target: 81P/Wild 2. M. Ishiguro, S. M. Kwon, Y. Sarugaku, S. Hasegawa, F. Usui, S. Nishiura, Y. Nakada, & H. Yano. 589, L101 (2003)
- LA BARBERA, F. Age, Metallicity, and Star Formation History of Cluster Galaxies at $z\sim0.3$. P. Merluzzi, F. La Barbera, M. Massarotti, G. Busarello, & M. Capaccioli. 589, 147 (2003)
- LABBÉ, I. See DADDI, E., et al. Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{\rm phot} < 4$ in the Hubble Deep Field–South.
- LABHARDT, LUKAS. The Cepheid Distance to NGC 5236 (M83) with the ESO Very Large Telescope. Frank Thim, G. A. Tammann, A. Saha, A. Dolphin, Allan Sandage, E. Tolstoy, & Lukas Labhardt. 590, 256 (2003)
- LÄHTEENMÄKI, A. Testing of Inverse Compton Models for Active Galactic Nuclei with Gamma-Ray and Radio Observations. A. Lähteenmäki & E. Valtaoja. 590, 95 (2003)
- LAI, DONG. Transfer of Polarized Radiation in Strongly Magnetized Plasmas and Thermal Emission from Magnetars: Effect of Vacuum Polarization. Dong Lai & Wynn C. G. Ho. 588, 962 (2003)
- LAMB, DON Q. See YANNY, BRIAN, et al. A Low-Latitude Halo Stream around the Milky Way.
- LAMING, J. M. Temperature Measurements in the Solar Transition Region Using N III Line Intensity Ratios. R. Doron, G. A. Doschek, J. M. Laming, U. Feldman, & A. K. Bhatia. 590, 1121 (2003)
- LANDI, E. Solving the Descrepancy between the Extreme-Ultraviolet and Microwave Observations of the Quiet Sun. E. Landi & F. Chiuderi Drago. 589, 1054 (2003)
- Atomic Data and Emission-Line Intensities for Ca VII. E. Landi & A. K. Bhatia. 589, 1075 (2003)
- Solar Flare Abundances of Potassium, Argon, and Sulphur. K. J. H. Phillips, J. Sylwester, B. Sylwester, & E. Landi. 589, L113 (2003)
- SOHO-Ulysses Spring 2000 Quadrature: Coronal Diagnostic Spectrometer and SUMER Results. S. Parenti, E. Landi, & B. J. I. Bromage. 590, 519 (2003)
- LANDSMAN, WAYNE. Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Road. 588, 299 (2003)
- LANDT, HERMINE. What Types of Jets Does Nature Make? A New Population of Radio Quasars. Paolo Padovani, Eric S. Perlman, Hermine Landt, Paolo Giommi, & Matteo Perri. 588, 128 (2003)
- LANE, B. F. Near-Infrared Interferometric Measurements of Herbig Ae/Be Stars. J. A. Eisner, B. F. Lane, R. L. Akeson, L. A. Hillenbrand, & A. I. Sargent. 588, 360 (2003)
- LANE, BENJAMIN F. Bringing Closure to Microlensing Mass Measurement. Neal Dalal & Benjamin F. Lane. 589, 199 (2003)
- LANG, C. Nonthermal Emission from the Arches Cluster (G0.121+0.017) and the Origin of γ-Ray Emission from 3EG J1746–2851. F. Yusef-Zadeh, M. Nord, M. Wardle, C. Law, C. Lang, & T. J. W. Lazio. 590, L103 (2003)

- LANZ, T. A Tale of Two Stars: The Extreme O7 Iaf+ Supergiant AV 83 and the OC7.5 III((f)) Star AV 69. D. John Hillier, T. Lanz, S. R. Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 588, 1039 (2003)
- LAOR, ARI. On the Nature of Low-Luminosity Narrow-Line Active Galactic Nuclei. Ari Laor. 590, 86 (2003)
- LAW, C. Nonthermal Emission from the Arches Cluster (G0.121+0.017) and the Origin of γ-Ray Emission from 3EG J1746–2851. F. Yusef-Zadeh, M. Nord, M. Wardle, C. Law, C. Lang, & T. J. W. Lazio. 590, L103 (2003)
- LAWRENCE, GARETH R. Rapid Acceleration of a Coronal Mass Ejection in the Low Corona and Implications for Propagation. Peter T. Gallagher, Gareth R. Lawrence, & Brian R. Dennis. 588, L53 (2003)
- LAWRENCE, K. See TEEGARDEN, B. J., et al. Discovery of a New Nearby Star. LAZARIAN, A. Thermal Conduction in Magnetized Turbulent Gas. *Jungyeon*
- LAZARIAN, A. Thermal Conduction in Magnetized Turbulent Gas. Jungyeon Cho. A. Lazarian, Albert Honein, Bernard Knaepen, Stavros Kassinos, & Parviz Moin. 589, L77 (2003)
- LAZIO, T. J. W. Nonthermal Emission from the Arches Cluster (G0.121+0.017) and the Origin of γ-Ray Emission from 3EG J1746–2851. F. Yusef-Zadeh, M. Nord, M. Wardle, C. Law, C. Lang, & T. J. W. Lazio. 590, L103 (2003)
- LAZZATI, D. The Resolved Fraction of the Cosmic X-Ray Background.

 A. Moretti, S. Campana, D. Lazzati, & G. Tagliaferri. 588, 696 (2003)
- LE, TRUONG. Inner Boundary Conditions for Advection-dominated Accretion onto Black Holes. Peter A. Becker & Truong Le. 588, 408 (2003)
- LEBRUN, F. See MEREGHETTI, S., et al. *Integral* and *XMM-Newton* Observations of the Weak Gamma-Ray Burst GRB 030227.
- LEER, EGIL. Two-dimensional Magnetohydrodynamic Models of the Solar Corona: Mass Loss from the Streamer Belt. Eirik Endeve, Egil Leer, & Thomas E. Holzer. 589, 1040 (2003)
- LEFLOCH, BERTRAND. Warm Molecular Hydrogen and Ionized Neon in the HH 2 Outflow. Bertrand LeFloch, J. Cernicharo, S. Cabrit, A. Noriega-Crespo, A. Moro-Martin, & D. Cesarsky. 590, L41 (2003)
- LEHNER, N. Far Ultraviolet Spectroscopic Explorer Snapshot Survey of O VI Variability in the Winds of 66 OB-Type Stars. N. Lehner, A. W. Fullerton, D. Massa, K. R. Sembach, & J. Zsargó. 589, 526 (2003)
- LEITNER, SAMUEL N. A Turbulent Origin for Flocculent Spiral Structure in Galaxies. Bruce G. Elmegreen, Debra Meloy Elmegreen, & Samuel N. Leitner. 590, 271 (2003)
- LEMAIRE, P. The Contribution of Polar Plumes to the Fast Solar Wind. A. H. Gabriel, F. Bely-Dubau, & P. Lemaire. 589, 623 (2003)
- LEMOINE, MARTIN. Particle Transport in Tangled Magnetic Fields and Fermi Acceleration at Relativistic Shocks. Martin Lemoine & Guy Pelletier. 589, L73 (2003)
- LENNON, D. J. A Tale of Two Stars: The Extreme O7 laf+ Supergiant AV 83 and the OC7.5 III(f)) Star AV 69. D. John Hillier, T. Lanz, S. R. Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 586, 1039 (2003)
- LENNON, DANIEL J. The Remarkable Alternating Spectra of the Of?p Star HD 191612. Nolan R. Walborn, Ian D. Howarth, Artemio Herrero, & Daniel J. Lennon. 588, 1025 (2003)
- LENTZ, ERIC J. Detectibility of Mixed Unburnt C+O in Type Ia Supernova Spectra. E. Baron, Eric J. Lentz, & Peter H. Hauschildt. 588, L29 (2003)
 LEONOR, I. See FALCONE, A., et al. Observation of GeV Solar Energetic
- Particles from the 1997 November 6 Event Using Milagrito.
- LÉPINE, J. R. D. Corotation, Stellar Wandering, and Fine Structure of the Galactic Abundance Pattern. J. R. D. Lépine, I. A. Acharova, & Yu. N. Mishurov. 589, 210 (2003)
- LEPSON, J. K. Emission-Line Spectra of Ar IX—Ar XVI in the Soft X-Ray Region 20–50 Å. J. K. Lepson, P. Beiersdorfer, E. Behar, & S. M. Kahn. 590, 604 (2003)
- LEVIN, YURI. Stellar Disk in the Galactic Center: A Remnant of a Dense Accretion Disk? Andrei M. Beloborodov & Yuri Levin. 590, L33 (2003)
- LEWIS, G. F. The Bivariate Luminosity-Color Distribution of IRAS Galaxies and Implications for the High-Redshift Universe. S. C. Chapman, G. Helou, G. F. Lewis, & D. A. Dale. 588, 186 (2003)
- Lewis, Geraint F. Nanolensing of Gamma-Ray Bursts. Mark A. Walker & Geraint F. Lewis. 589, 844 (2003)
- LI, AIGEN. Modeling the Infrared Emission from the HR 4796A Disk. Aigen Li & J. I. Lunine. 590, 368 (2003)
- LI, J. Ultraviolet Spectroscopy of Narrow Coronal Mass Ejections. D. Dobrzycka, J. C. Raymond, D. A. Biesecker, J. Li, & A. Ciaravella. 588, 586 (2003)

- LI, JINGQIANG. Refining Chandral ACIS Subpixel Event Repositioning Using a Backside-illuminated CCD Model. Jingqiang Li, Joel H. Kastner, Gregory Y. Prigozhin, & Norbert S. Schulz. 590, 586 (2003)
- L1, ZHI-YUN. A Coupled Dynamical and Chemical Model of Starless Cores of Magnetized Molecular Clouds. II. Chemical Differentiation. V. I. Shematovich, D. S. Wiebe, B. M. Shustov, & Zhi-Yun Li. 588, 894 (2003)
 - Wind-Interaction Models for the Early Afterglows of Gamma-Ray Bursts: The Case of GRB 021004. Zhi-Yun Li & Roger A. Chevalier. 589, L69 (2003)
 - Locating the Launching Region of T Tauri Winds: The Case of DG Tauri. Jeffrey M. Anderson, Zhi-Yun Li, Ruben Krasnopolsky, & Roger D. Blandford. 590, L107 (2003)
- LIEBERT, JAMES. Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)
- LIEDAHL, DUANE A. The Fe XXII I(11.92 A)/I(11.77 A) Density Diagnostic Applied to the Chandra High-Energy Transmission Grating Spectrum of EX Hydrae. Christopher W. Mauche, Duane A. Liedahl, & Kevin B. Fournier. 588, L101 (2003)
- LILLELEHT, LEMBIT U. Zinc Crystal Growth in Microgravity. B. P. Michael, Joseph A. Nuth III, & Lembit U. Lilleleht. 590, 579 (2003)
- LIN, DOUGLAS N. C. The Effect of Tidal Inflation Instability on the Mass and Dynamical Evolution of Extrasolar Planets with Ultrashort Periods. Pin-Gao Gu, Douglas N. C. Lin, & Peter H. Bodenheimer. 588, 509 (2003)
- Supernova Enrichment of Dwarf Spheroidal Galaxies. P. Chris Fragile, Stephen D. Murray, Peter Anninos, & Douglas N. C. Lin. 590, 778 (2003)
- LINGENFELTER, R. E. The Superbubble Origin of ²²Ne in Cosmic Rays. J. C. Higdon & R. E. Lingenfelter. 590, 822 (2003)
- LINK, BENNETT. The Crustal Rigidity of a Neutron Star, and Implications for PSR 1828-11 and Other Precession Candidates. Curt Cutler, Greg Ushomirsky, & Bennett Link. 588, 975 (2003)
- LINK, ROBERT P. The Thermal Regulation of Gravitational Instabilities in Protoplanetary Disks. Brian K. Pickett, Annie C. Mejia, Richard H. Durisen, Patrick M. Cassen, Donald K. Berry, & Robert P. Link. 590, 1060 (2003)
- LIPKIN, Y. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- LISTER, M. L. Jet Collimation in Action: Realignment on Kiloparsec Scales in 3C 279. D. C. Homan, M. L. Lister, K. I. Kllermann, M. H. Cohen, E. Ros, J. A. Zensus, M. Kadler, & R. C. Vermeulen. 589, L9 (2003)
- LITVAK, M. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- LIU, GUO-CHIN. Observational Strategies of Cosmic Microwave Background Temperature and Polarization Interferometry Experiments. Chan-Gyung Park, Kin-Wang Ng, Changbom Park, Guo-Chin Liu, & Keiichi Umetsu. 589, 67 (2003)
- LIU, S.-Y. A Sensitive Very Large Array Search for Small-Scale Glycine Emission toward OMC-1. J. M. Hollis, J. A. Pedelty, L. E. Snyder, P. R. Jewell, F. J. Lovas, Patrick Palmer, & S.-Y. Liu. 588, 353 (2003)
 - A Survey of Acetic Acid toward Hot Molecular Cores. A. Remijan, L. E. Snyder, D. N. Friedel, S.-Y. Liu, & R. Y. Shah. 590, 314 (2003)
- LIVINGSTON, W. Weak Infrared Molecular Lines Reveal Rapid Outflow in Cool Magnetic Sunspot Penumbral Fibrils. M. J. Penn, W. D. Cao, S. R. Walton, G. A. Chapman, & W. Livingston. 590, L119 (2003)
- LLOYD, D. A. X-Ray Studies of Two Neutron Stars in 47 Tucanae: Toward Constraints on the Equation of State. C. O. Heinke, J. E. Grindlay, D. A. Lloyd, & P. D. Edmonds. 588, 452 (2003)
- A Chandra X-Ray Study of the Dense Globular Cluster Terzan 5. C. O. Heinke, P. D. Edmonds, J. E. Grindlay, D. A. Lloyd, H. N. Cohn, & P. M. Lugger, 590, 809 (2003)
- LOEB, ABRAHAM. Metal Absorption Lines as Probes of the Intergalactic Medium Prior to the Reionization Epoch. Steven R. Furlanetto & Abraham Loeb. 588, 18 (2003)
 - Was the Universe Reionized by Massive Metal-free Stars? J. Stuart B. Wyithe & Abraham Loeb. 588, L69 (2003)
 - Periodic Flux Variability of Stars Due to the Reflex Doppler Effect Induced by Planetary Companions. Abraham Loeb & B. Scott Gaudi. 588, L117 (2003)
 - Cosmological Origin of the Stellar Velocity Dispersions in Massive Early-Type Galaxies. Abraham Loeb & P. J. E. Peebles. 589, 29 (2003)

- Low-Frequency Gravitational Waves from Massive Black Hole Binaries: Predictions for LISA and Pulsar Timing Arrays. J. Stuart B. Wyithe & Abraham Loeb. 590, 691 (2003)
- LONGCOPE, D. W. Magnetic Helicity Injection by Horizontal Flows in the Quiet Sun. I. Mutual-Helicity Flux. B. T. Welsch & D. W. Longcope. 588, 620 (2003)
- LONSDALE, C. J. R Cassiopeiae: Relative Strengths of SiO Masers at 43 and 86 GHz. R. B. Phillips, A. H. Straughn, S. S. Doeleman, & C. J. Lonsdale. 588, L105 (2003)
- LONSDALE, CAROL J. See KURASZKIEWICZ, JOANNA K., et al. The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies.
- LOOMIS, KAREN. Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)
- LOVAS, F. J. A Sensitive Very Large Array Search for Small-Scale Glycine Emission toward OMC-1. J. M. Hollis, J. A. Pedelty, L. E. Snyder, P. R. Jewell, F. J. Lovas, Patrick Palmer, & S.-Y. Liu. 588, 353 (2003)
- LOVELL, JAMES E. J. The Quintuple Quasar: Radio and Optical Observations. Joshua N. Winn, Christopher S. Kochanek, Charles R. Keeton, & James E. J. Lovell. 590, 26 (2003)
- Low, B. C. A Morphological Study of Helical Coronal Magnetic Structures. B. C. Low & M. A. Berger, 589, 644 (2003)
- LOWRY, JUSTIN D. Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martín A. Guerrero, & Margarita Rosado. 590, 306 (2003)
- LU, NANYAO. Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features. Nanyao Lu, George Helou, Michael W. Werner, Harriet L. Dinerstein, Daniel A. Dale, Nancy A. Silbermann, Sangeeta Malhotra, Charles A. Beichman, & Thomas H. Jarrett. 588, 199 (2003)
- Lu, Y. An Accretion Model for the Growth of the Central Black Hole Associated with Ionization Instability in Quasars. Y. Lu, K. S. Cheng, & S. N. Zhang. 590, 52 (2003)
- LUGGER, P. M. A Chandra X-Ray Study of the Dense Globular Cluster Terzan 5. C. O. Heinke, P. D. Edmonds, J. E. Grindlay, D. A. Lloyd, H. N. Cohn, & P. M. Lugger. 590, 809 (2003)
- LUHMAN, K. L. New Low-Mass Members of the Taurus Star-forming Region.
 K. L. Luhman, Cesar Briceno, John R. Stauffer, Lee Hartmann, D. Barrado y Navascues, & Nelson Caldwell. 590, 348 (2003)
- LUND, N. See MEREGHETTI, S., et al. *Integral* and *XMM-Newton* Observations of the Weak Gamma-Ray Burst GRB 030227.
- LUNINE, J. I. On the Indirect Detection of Sodium in the Atmosphere of the Planetary Companion to HD 209458. J. J. Fortney, D. Sudarsky, I. Hubeny, C. S. Cooper, W. B. Hubbard, A. Burrows, & J. I. Lunine. 589, 615 (2003)
- Modeling the Infrared Emission from the HR 4796A Disk. Aigen Li & J. I. Lunine, 590, 368 (2003)
- LYNE, A. G. A Search for Pulsars in Quiescent Soft X-Ray Transients. I. M. Burgay, L. Burderi, A. Possenti, N. D'Amico, R. N. Manchester, A. G. Lyne, F. Camilo, & S. Campana. 589, 902 (2003)
- LYUTIKOV, MAXIM. The Pulsar Wind Nebula in G11.2—0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)
 - Dynamics of Relativistic Reconnection. Maxim Lyutikov & Dmitri Uzdensky. 589, 893 (2003)
- MACCARONE, THOMAS J. Some Constraints on the Effects of Age and Metallicity on the Low-Mass X-Ray Binary Formation Rate. Arunav Kundu, Thomas J. Maccarone, Stephen E. Zepf, & Thomas H. Puzia. 589, L81 (2003)
- MACCIÒ, ANDREA V. Mass of Clusters in Simulations. Andrea V. Macciò, Giuseppe Murante, & Silvio P. Bonometto. 588, 35 (2003)
- MACGREGOR, K. B. Gravity Wave-driven Flows in the Solar Tachocline. II. Stationary Flows. Eun-jin Kim & K. B. MacGregor. 588, 645 (2003)
- MADEJSKI, GREG M. Simultaneous Chandra and Rossi X-Ray Timing Explorer Observations of the Nearby Bright Seyfert 2 Galaxy NGC 4945. Chris Done, Greg M. Madejski, Piotr T. Zycki, & Lincoln J. Greenhill. 588, 763 (2003)

- MADER, J. See SCHAEFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
- MADSEN, G. J. A Search for Ionized Gas in the Draco and Ursa Minor Dwarf Spheroidal Galaxies. J. S. Gallagher, G. J. Madsen, R. J. Reynolds, E. K. Grebel, & T. A. Smecker-Hane. 588, 326 (2003)
- Маеzawa, Нікоуuki. See Kamegai, Kazuhisa, et al. Distribution of the C $\scriptstyle\rm I$ Emission in the ρ Ophiuchi Dark Cloud.
- MAGEE, DANIEL. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- MAINIERI, V. See WANG, J., et al. A Puzzling X-Ray Source Found in the Chandra Deep Field-South.
- MAKINO, JUNICHIRO. Structure of Dark Matter Halos from Hierarchical Clustering. II. Dependence of Cosmological Models in Cluster-sized Halos. Toshiyuki Fukushige & Junichiro Makino. 588, 674 (2003)
- A Dynamical Model for the Globular Cluster G1. Holger Baumgardt, Junichiro Makino, Piet Hut, Steve McMillan, & Simon Portegies Zwart. 589, L25 (2003)
- MALHOTRA, SANGEETA. See LU, NANYAO, et al. Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features.
- MALIZIA, A. BeppoSAX Average Spectra of Seyfert Galaxies. A. Malizia, L. Bassani, J. B. Stephen, G. Di Cocco, F. Fiore, & A. J. Dean. 589, L17 (2003)
- MALKAN, MATT A. See KURASZKIEWICZ, JOANNA K., et al. The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies.
- MALLÉN-ORNELAS, GABRIELA. The Absorption and Emission Kinematics in the z = 0.7450 Mg it Absorber toward Q1331+17. Sara L. Ellison, Gabriela Mallén-Ornelas, & Marcin Sawicki. 589, 709 (2003)
- MALONEY, PHILIP R. 3.1 Micron H₂O Ice Absorption in LINER-Type Ultraluminous Infrared Galaxies with Cool Far-Infrared Colors: The Centrally Concentrated Nature of Their Deeply Buried Energy Sources. Masatoshi Imanishi & Philip R. Maloney. 588, 165 (2003)
- Are Compact High-Velocity Clouds Extragalactic Objects? Philip R. Maloney & Mary E. Putman. 589, 270 (2003)
- MALTONI, M. Large Mixing Angle Oscillations as a Probe of the Deep Solar Interior. C. Burgess, N. S. Dzhalilov, M. Maltoni, T. I. Rashba, V. B. Semikoz, M. A. Tórtola, & J. W. F. Valle. 588, L65 (2003)
- MANCHESTER, R. N. A Search for Pulsars in Quiescent Soft X-Ray Transients.
 I. M. Burgay, L. Burderi, A. Possenti, N. D'Amico, R. N. Manchester,
 A. G. Lyne, F. Camilo, & S. Campana. 589, 902 (2003)
- MANESS, HOLLY L. Abundance Anomalies in the X-Ray Spectra of Planetary Nebulae NGC 7027 and BD +30°3639. Holly L. Maness, Saeqa D. Vrtilek, Joel H. Kastner, & Noam Soker. 589, 439 (2003)
- MARBLE, ANDREW R. A Hubble Space Telescope/WFPC2 Snapshot Survey of 2MASS-selected Red QSOs. Andrew R. Marble, Dean C. Hines, Gary D. Schmidt, Paul S. Smith, Jason A. Surace, Lee Armus, Roc M. Cutri, & Brant O. Nelson. 590, 707 (2003)
- MARCONI, ALESSANDRO. The Relation between Black Hole Mass, Bulge Mass, and Near-Infrared Luminosity. Alessandro Marconi & Leslie K. Hunt. 589, L21 (2003)
- MARCONI, G. See ISRAEL, G. L., et al. The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849—400910.
- MARCY, GEOFFREY W. A Sub-Saturn Mass Planet Orbiting HD 3651. Debra A. Fischer, R. Paul Butler, Geoffrey W. Marcy, Steven S. Vogt, & Gregory W. Henry. 590, 1081 (2003)
- MARENGO, MASSIMO. Theoretical Limb Darkening for Classical Cepheids. II. Corrections for the Geometric Baade-Wesselink Method. Massimo Marengo, Margarita Karovska, Dimitar D. Sasselov, Costas Papaliolios, John T. Armstrong, & Tyler E. Nordgren. 589, 968 (2003)
- MARKOFF, S. See FABBIANO, G., et al. The X-Ray-faint Emission of the Supermassive Nuclear Black Hole of IC 1459.
- MARSHALL, H. L. Discrete X-Ray Signatures of a Photoionized Plasma above the Accretion Disk of the Neutron Star EXO 0748-676. M. A. Jimenez-Garate, N. S. Schulz, & H. L. Marshall. 590, 432 (2003)
- The Nearby Neutron Star RX J0720.4—3125 from Radio to X-Rays. D. L. Kaplan, M. H. van Kerkwijk, H. L. Marshall, B. A. Jacoby, S. R. Kulkarni, & D. A. Frail. 590, 1008 (2003)
- MARTEL, ANDRÉ R. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- MARTINI, PAUL. Circumnuclear Dust in Nearby Active and Inactive Galaxies.

 II. Bars, Nuclear Spirals, and the Fueling of Active Galactic Nuclei. Paul

- Martini, Michael W. Regan, John S. Mulchaey, & Richard W. Pogge. 589, 774 (2003)
- MARTOCCHIA, ANDREA. The Lack of Broad-Line Regions in Low Accretion Rate Active Galactic Nuclei as Evidence of Their Origin in the Accretion Disk. Fabrizio Nicastro, Andrea Martocchia, & Giorigo Matt. 589, L13 (2003)
- MARVEL, KEVIN B. See IMAI, HIROSHI, et al. The Three-dimensional Kinematics of Water Masers around the Semiregular Variable RT Virginis.

 MAS-HESSE, J. M. See MEREGHETTI, S., et al. Integral and XMM-Newton

Observations of the Weak Gamma-Ray Burst GRB 030227.

- MASON, G. M. Evidence for a Suprathermal Seed Population of Heavy Ions Accelerated by Interplanetary Shocks near 1 AU. M. I. Desai, G. M. Mason, J. R. Dwyer, J. E. Mazur, R. E. Gold, S. M. Krimigis, C. W. Smith, & R. M. Skoug. 588, 1149 (2003)
- MASSA, D. Far Ültraviolet Spectroscopic Explorer Snapshot Survey of O vI Variability in the Winds of 66 OB-Type Stars. N. Lehner, A. W. Fullerton, D. Massa, K. R. Sembach, & J. Zsargó. 589, 526 (2003)
- MASSAROTTI, M. Age, Metallicity, and Star Formation History of Cluster Galaxies at $z \sim 0.3$. P. Merluzzi, F. La Barbera, M. Massarotti, G. Busarello, & M. Capaccioli. 589, 147 (2003)
- MASSET, F. S. Runaway Migration and the Formation of Hot Jupiters. F. S. Masset & J. C. B. Papaloizou. 588, 494 (2003)
- MATARRESE, S. Probing Dark Energy with the Cosmic Microwave Background: Projected Constraints from the Wilkinson Microwave Anisotropy Probe and Planck. Amedeo Balbi, C. Baccigalupi, F. Perrotta, S. Matarrese, & N. Vittorio. 588, L5 (2003)
- MATHEWS, WILLIAM G. Rapid Cooling of Dusty Gas in Elliptical Galaxies. William G. Mathews & Fabrizio Brighenti. 590, L5 (2003)
- MATHIEU, ROBERT D. Gas in the Terrestrial Planet Region of Disks: CO Fundamental Emission from T Tauri Stars. Joan Najita, John S. Carr, & Robert D. Mathieu. 589, 931 (2003)
- MATHUR, SMITA. Chandra Discovery of the Intracluster Medium around UM 425 at a Redshift of 1.47. Smita Mathur & Rik J. Williams. 589, L1 (2003)
- MATT, GIORIGO. The Lack of Broad-Line Regions in Low Accretion Rate Active Galactic Nuclei as Evidence of Their Origin in the Accretion Disk. Fabrizio Nicastro, Andrea Martocchia, & Giorigo Matt. 589, L13 (2003)
- MATTHAEUS, W. H. Nonlinear Collisionless Perpendicular Diffusion of Charged Particles. W. H. Matthaeus, G. Qin, J. W. Bieber, & G. P. Zank. 590, L53 (2003)
- MATTOX, J. R. EGRET Upper Limits on the High-Energy Gamma-Ray Emission of Galaxy Clusters. O. Reimer, M. Pohl, P. Sreekumar, & J. R. Mattox. 588, 155 (2003)
- MAUCHE, CHRISTOPHER W. The Fe XXII I(11.92 Å)/I(11.77 Å) Density Diagnostic Applied to the Chandra High-Energy Transmission Grating Spectrum of EX Hydrae. Christopher W. Mauche, Duane A. Liedahl, & Kevin B. Fournier. 588, L101 (2003)
- MAZEH, TSEVI. A Possible Correlation between Mass Ratio and Period Ration in Multiple Planetary Systems. Tsevi Mazeh & Shay Zucker. 590, L115 (2003)
- MAZETS, E. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- MAZUR, J. E. Evidence for a Suprathermal Seed Population of Heavy Ions Accelerated by Interplanetary Shocks near 1 AU. M. I. Desai, G. M. Mason, J. R. Dwyer, J. E. Mazur, R. E. Gold, S. M. Krimigis, C. W. Smith, & R. M. Skoug. 588, 1149 (2003)
- McCabe, C. The First Detection of Spatially Resolved Mid-Infrared Scattered Light from a Protoplanetary Disk. C. McCabe, G. Duchêne, & A. M. Ghez. 588, L113 (2003)
- McCarthy, M. C. The Radio Spectrum of the Phenyl Radical. M. C. McCarthy, R. J. McMahon, C. A. Gottlieb, J. B. Dudek, J. F. Stanton, & P. Thaddeus, 590, L61 (2003)
- McCarthy, P. See Price, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- McCauley, Thomas P. Neutrinos from Accreting Neutron Stars. Luis A. Anchordoqui, Diego F. Torres, Thomas P. McCauley, Gustavo E. Romero, & Felix A. Aharonian. 589, 481 (2003)
- McCollough, M. L. The 590 Day Long-Term Periodicity of the Microquasar GRS 1915+105. A. Rau, J. Greiner, & M. L. McCollough. 590, L37 (2003)
- McCulloch, P. M. See Greenhill, L. J., et al. A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy.

- McCullough, J. F. See Falcone, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- McDowell, J. See Fabbiano, G., et al. The X-Ray-faint Emission of the Supermassive Nuclear Black Hole of IC 1459.
- McDowell, Jonathan C. See Kuraszkiewicz, Joanna K., et al. The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies.
- McEnery, J. E. See Falcone, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- McGLYNN, T. See TEEGARDEN, B. J., et al. Discovery of a New Nearby Star.
 McKINNEY, JONATHAN C. HARM: A Numerical Scheme for General Relativistic Magnetohydrodynamics. Charles F. Gammie, Jonathan C. McKinney, & Gábor Tóth. 589, 444 (2003)
- MCKINNON, MARK M. The Transition between Nonorthogonal Polarization Modes in PSR B2016+28 at 1404 MHz. Mark M. McKinnon. 590, 1026 (2003)
- McLeod, Kim K. See Kuraszkiewicz, Joanna K., et al. The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies.
- MCMAHON, R. J. The Radio Spectrum of the Phenyl Radical. M. C. McCarthy, R. J. McMahon, C. A. Gottlieb, J. B. Dudek, J. F. Stanton, & P. Thaddeus. 590, L61 (2003)
- McMILLAN, RUSSET. Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)
- McMillan, Steve. A Dynamical Model for the Globular Cluster G1. Holger Baumgardt, Junichiro Makino, Piet Hut, Steve McMillan, & Simon Portegies Zwart. 589, L25 (2003)
- McNamara, B. R. See Vikhlinin, A., et al. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$.
- MEADE, MARILYN R. Spectroscopic and Spectropolarimetric Observations of V838 Monocerotis. John P. Wisniewski, Nancy D. Morrison, Karen S. Bjorkman, Anatoly S. Miroshnichenko, Amanda C. Gault, Jennifer L. Hofiman, Marilyn R. Meade, & Jason M. Nett. 588, 486 (2003)
- MEJÍA, ÁNNIE C. The Thermal Regulation of Gravitational Instabilities in Protoplanetary Disks. Brian K. Pickett, Annie C. Mejía, Richard H. Durisen, Patrick M. Cassen, Donald K. Berry, & Robert P. Link. 590, 1060 (2003)
- MELÉNDEZ, JORGE. See BARBUY, BEATRIZ, et al. Oxygen Abundance in the Template Halo Giant HD 122563.
- MELNICK, GARY J. Detections of OH toward the Extreme Carbon Star IRC +10216. K. E. Saavik Ford, David A. Neufeld, Paul F. Goldsmith, & Gary J. Melnick. 589, 430 (2003)
- Submillimeter Wave Astronomy Satellite Mapping Observations of Water Vapor around Sagittarius B2. David A. Neufeld, Edwin A. Bergin, Gary J. Melnick, & Paul F. Goldsmith. 590, 882 (2003)
- Melott, Adrian. Universal Behavior of Phase Correlations in Nonlinear Gravitational Clustering. Peter Watts, Peter Coles, & Adrian Melott. 589, L61 (2003)
- L61 (2003)

 MENANTEAU, F. Quasars Clustering at $z \approx 3$ on Scales $\lesssim 10h^{-1}$ Mpc.

 L. Infante, J. Varela, M. Moles, G. Hertling, A. García, & F. Menanteau.
- 588, 90 (2003)
 MENANTEAU, FELIPE. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant
 Type Ia Supernovae in the Hubble Deep Field-North with the Advanced
- Camera for Surveys.

 MÉNARD, FRANÇOIS. Hubble Space Telescope WFPC2 Imaging of the Disk and
 Jet of HV Tauri C. Karl R. Stapelfeldt, François Ménard, Alan M. Watson,
 John E. Krist, Catherine Dougados, Deborah L. Padgett, & Wolfgang
 Brandner, 589, 410 (2003)
- MENNA, M. T. Coupling between Periodic and Aperiodic Variability in SAX J1808.4—3658. M. T. Menna, L. Burderi, L. Stella, N. Robba, & M. van der Klis. 589, 503 (2003)
- MENTEN, K. M. The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348. A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
- MEREGHETTI, S. See ISRAEL, G. L., et al. The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849—400910.
- Integral and XMM-Newton Observations of the Weak Gamma-Ray Burst GRB 030227. S. Mereghetti, D. Götz, A. Tiengo, V. Beckmann, J. Borkowski, T.J.-L. Courvoisier, A. von Kienlin, V. Schoenfelder, J. P. Roques, L. Bouchet, P. Ubertini, A. Castro-Tirado, F. Lebrun, J. Paul, N. Lund, J. M. Mas-Hesse, W. Hermsen, P. R. den Hartog, & C. Winkler. 590, L73 (2003)

MERLUZZI, P. Age, Metallicity, and Star Formation History of Cluster Galaxies at $z\sim0.3$. P. Merluzzi, F. La Barbera, M. Massarotti, G. Busarello, & M. Capaccioli. 589, 147 (2003)

MÉSZÁROS, P. See SCHAEFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.

MÉSZÁROS, PETER. Neutrino-driven Explosions in Gamma-Ray Bursts and Hypernovae. Chris L. Fryer & Peter Mészáros. 588, L25 (2003)

Gravitational Radiation from Gamma-Ray Burst Progenitors. Shiho Kobayashi & Peter Mészáros. 589, 861 (2003)

MEURER, GERHARDT R. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field-North with the Advanced Camera for Surveys.

MEZA, ANDRÉS. Simulations of Galaxy Formation in a ACDM Universe. III.
The Dissipative Formation of an Elliptical Galaxy. Andrés Meza, Julio F.
Navarro, Matthias Steinmetz, & Vincent R. Eke. 590, 619 (2003)

MIAJA, L. A Polarization Survey of SiO Maser Variability in Evolved Stars. J. Glenn, P. R. Jewell, R. Fourre, & L. Miaja. 588, 478 (2003)

MICELA, G. Chandra Observations of the Young Open Cluster NGC 2516. F. Damiani, E. Flaccomio, G. Micela, S. Sciortino, F.R. Harnden, Jr., S.S. Murray, S.J. Wolk, & R.D. Jeffries. 588, 1009 (2003)

MICHAEL, B. P. Zinc Crystal Growth in Microgravity. B. P. Michael, Joseph A. Nuth III, & Lembit U. Lilleleht. 590, 579 (2003)

MICHELSON, PETER F. The Gamma-Ray Blazar Content of the Northern Sky. David Sowards-Emmerd, Roger W. Romani, & Peter F. Michelson. 590, 109 (2003)

MIGENES, VICTOR. See IMAI, HIROSHI, et al. The Three-dimensional Kinematics of Water Masers around the Semiregular Variable RT Virginis.

MIGNANI, R. See ISRAEL, G. L., et al. The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849—400910.

MILEY, GEORGE. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.

MILLER, J. S. Keck Spectroscopy of Four Quasi-stellar Object Host Galaxies. J. S. Miller & A. I. Sheinis. 588, L9 (2003)

MILLER, R. S. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.

MINCER, A. I. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.

MINOWA, YOSUKE. See GOTO, MIWA, et al. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae.

See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.

MIRABAL, N. Search for a Point-Source Counterpart of the Unidentified Gamma-Ray Source TeV J2032+4130 in Cygnus. R. Mukherjee, J. P. Halpern, E. V. Gotthelf, M. Eracleous, & N. Mirabal. 589, 487 (2003)

MIROSHNICHENKO, ANATOLY S. Spectroscopic and Spectropolarimetric Observations of V838 Monocerotis. John P. Wisniewski, Nancy D. Morrison, Karen S. Bjorkman, Anatoly S. Miroshnichenko, Amanda C. Gault, Jennifer L. Hoffman, Marilyn R. Meade, & Jason M. Nett. 588, 486 (2003)

MISHUROV, YU. N. Corotation, Stellar Wandering, and Fine Structure of the Galactic Abundance Pattern. J. R. D. Lépine, I. A. Acharova, & Yu. N. Mishurov. 589, 210 (2003)

MISRA, R. A Continuous Injection Plasma Model for the X-Ray/Radio Knots in Kiloparsec-Scale Jets of Active Galactic Nuclei. S. Sahayanathan, R. Misra, A. K. Kembhavi, & C. L. Kaul. 588, L77 (2003)

MISSELT, K. A. Dust Grain Size Distributions from MRN to MEM. Geoffrey C. Clayton, Michael J. Wolff, Ulysses J. Sofia, K. D. Gordon, & K. A. Misselt. 588, 871 (2003)

MITROFANOV, I. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.

MIYAZAKI, SATOSHI. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.

See IYE, MASANORI, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim$ 1.5.

MIYOSHI, MAKOTO. See IMAI, HIROSHI, et al. The Three-dimensional Kinematics of Water Masers around the Semiregular Variable RT Virginis.

MIZUTANI, ARIHIRO. Kinematics of Tidal Debris from ω Centauri's Progenitor Galaxy. Arihiro Mizutani, Masashi Chiba, & Tsuyoshi Sakamoto. 589, L89 (2003) MOFFAT, ANTHONY F. J. Discovery of Highly Dynamic Matter Enhancements along the Polar Axis and Equatorial Plane in the Luminous Blue Variable Binary HD 5980. A. Villar-Sbaffi, Anthony F. J. Moffat, & N. St-Louis. 590, 483 (2003)

MOIN, PARVIZ. Thermal Conduction in Magnetized Turbulent Gas. Jungyeon Cho, A. Lazarian, Albert Honein, Bernard Knaepen, Stavros Kassinos, & Parviz Main, 589, 1.77 (2003)

Moles, M. Quasars Clustering at $z\approx 3$ on Scales $\lesssim 10h^{-1}$ Mpc. L. Infante, J. Varela, M. Moles, G. Hertling, A. García, & F. Menanteau. 588, 90 (2003)

MONIER, ERIC M. Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped Ly α Absorption: Constraints on the Cosmic Neutral Gas-Phase Metallicity at Redshift $z\approx 0.4$. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003)

MONTANARI, E. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.

MOON, Y.-J. Sympathetic Coronal Mass Ejections. Y.-J. Moon, G. S. Choe, Haimin Wang, & Y. D. Park. 588, 1176 (2003)

MOORE, MARLA H. Photodestruction of Relevant Interstellar Molecules in Ice Mixtures. Hervé Cottin, Marla H. Moore, & Yves Bénilan. 590, 874 (2003)

Moorwood, A. F. M. See Daddi, E., et al. Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{\rm phot} < 4$ in the Hubble Deep Field–South.

MORALES, M. F. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.

MORAN, J. M. See GREENHILL, L. J., et al. A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy.

MORETTI, A. The Resolved Fraction of the Cosmic X-Ray Background.

A. Moretti, S. Campana, D. Lazzati, & G. Tagliaferri. 588, 696 (2003)

MORETTI, P. F. Detection of Photospheric Impacts from Chromospheric Impulsive Events. P. F. Moretti, F. Berrilli, A. Sebastianelli, C. Briand, & E. Pietropaolo. 589, L109 (2003)

MORI, MASAKI. Dense Gas Clouds and the Unidentified EGRET Sources. Mark Walker, Masaki Mori, & Michiko Ohishi. 589, 810 (2003)

MORIARTY-SCHIEVEN, G. H. See FRAIL, D. A., et al. The Broadband Afterglow of GRB 980703.

MORO-MARTIN, A. Warm Molecular Hydrogen and Ionized Neon in the HH 2 Outflow. Bertrand LeFloch, J. Cernicharo, S. Cabrit, A. Noriega-Crespo, A. Moro-Martin, & D. Cesarsky. 590, L41 (2003)

MORRIS, M. R. See Muno, M. P., et al. A Deep *Chandra* Catalog of X-Ray Point Sources toward the Galactic Center.

MORRIS, MARK. Squezars: Tidally Powered Stars Orbiting a Massive Black Hole. Tal Alexander & Mark Morris. 590, L25 (2003)

MORRISON, NANCY D. Spectroscopic and Spectropolarimetric Observations of V838 Monocerotis. John P. Wisniewski, Nancy D. Morrison, Karen S. Bjorkman, Anatoly S. Miroshnichenko, Amarda C. Gault, Jennifer L. Hoffman, Marilyn R. Meade, & Jason M. Nett. 588, 486 (2003)

MOTCH, C. See ISRAEL, G. L., et al. The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849-400910.

MUDERS, D. Two Molecular Clouds near M17. T. L. Wilson, M. M. Hanson, & D. Muders. 590, 895 (2003)

Ми́лса, R. See Stepanian, J. A., et al. A Multiwavelength Study of Narrow-Line Seyfert 1 Galaxies from the Second Byurakan Survey.

MUKAI, K. Diffuse X-Ray Emission from M101. K. D. Kuntz, S. L. Snowden, W. D. Pence, & K. Mukai. 588, 264 (2003)

MUKHERJEE, R. Search for a Point-Source Counterpart of the Unidentified Gamma-Ray Source TeV J2032+4130 in Cygnus. R. Mukherjee, J. P. Halpern, E. V. Gotthelf, M. Eracleous, & N. Mirabal. 589, 487 (2003)

MULCHAEY, JOHN S. Circumnuclear Dust in Nearby Active and Inactive Galaxies. II. Bars, Nuclear Spirals, and the Fueling of Active Galactic Nuclei. Paul Martini, Michael W. Regan, John S. Mulchaey, & Richard W. Pogge. 589, 774 (2003)

Mullis, C. R. See Vikhlinin, A., et al. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$.

MUNO, M. P. A Deep Chandra Catalog of X-Ray Point Sources toward the Galactic Center. M. P. Muno, F. K. Baganoff, M. W. Bautz, W. N. Brandt, P. S. Broos, E. D. Feigelson, G. P. Garmire, M. R. Morris, G. R. Ricker, & L. K. Townsley. 589, 225 (2003)

MUNO, MICHAEL P. Eddington-limited X-Ray Bursts as Distance Indicators. I. Systematic Trends and Spherical Symmetry in Bursts from 4U 1728-34.

- Duncan K. Galloway, Dimitrios Psaltis, Deepto Chakrabarty, & Michael P. Muno. 590, 999 (2003)
- MUÑOZ-TUÑÓN, C. On the Rapidly Cooling Interior of Supergalactic Winds. S. Silich, G. Tenorio-Tagle, & C. Muñoz-Tuñón. 590, 791 (2003)
- MURANTE, GIUSEPPE. Mass of Clusters in Simulations. Andrea V. Macciò, Giuseppe Murante, & Silvio P. Bonometto. 588, 35 (2003)
- MURATA, YASUHIRO. See IMAI, HIROSHI, et al. The Three-dimensional Kinematics of Water Masers around the Semiregular Variable RT Virginis.
- MURRAY, N. Planet Migration and Binary Companions: The Case of HD 80606b. Y. Wu & N. Murray. 589, 605 (2003)
- MURRAY, S.S. Chandra Observations of the Young Open Cluster NGC 2516.
 F. Damiani, E. Flaccomio, G. Micela, S. Sciortino, F.R. Harnden, Jr., S.S. Murray, S.J. Wolk, & R.D. Jeffries. 588, 1009 (2003)
- MURRAY, STEPHEN D. Supernova Enrichment of Dwarf Spheroidal Galaxies. P. Chris Fragile, Stephen D. Murray, Peter Anninos, & Douglas N. C. Lin. 590, 778 (2003)
- MUSLIMOV, ALEX G. Extended Acceleration in Slot Gaps and Pulsar High-Energy Emission. Alex G. Muslimov & Alice K. Harding. 588, 430 (2003)
- MYERS, P. C. Precise Millimeter-Wave Laboratory Frequences for CS and C³⁴S. C. A. Gottlieb, P. C. Myers, & P. Thaddeus. 588, 655 (2003)
- NADALIN, I. Intrinsic Properties of the Young Stellar Object SU Aurigae. L. E. DeWarf, J. F. Sepinsky, E. F. Guinan, I. Ribas, & I. Nadalin. 590, 357 (2003)
- NAGATA, SHIN'ICHI. Spatial and Temporal Properties of Hot and Cool Coronal Loops. Shin'ichi Nagata, Hirohisa Hara, Ryouhei Kano, Ken Kobayashi, Taro Sakao, Toshifumi Shimizy, Saku Tsuneta, Tsuyoshi Yoshida, & Joseph B. Gurman. 590, 1095 (2003)
- NAIR, PREETHI. A New Approach to Galaxy Morphology. I. Analysis of the Sloan Digital Sky Survey Early Data Release. Roberto G. Abraham, Sidney van den Bergh, & Preethi Nair. 588, 218 (2003)
- NAJITA, JOAN. Gas in the Terrestrial Planet Region of Disks: CO Fundamental Emission from T Tauri Stars. Joan Najita, John S. Carr, & Robert D. Mathieu. 589, 931 (2003)
- NAKADA, Y. Discovery of Dust Trail of STARDUST Comet Sample Return Mission Target: 81P/Wild 2. M. Ishiguro, S. M. Kwon, Y. Sarugaku, S. Hasegawa, F. Usui, S. Nishiura, Y. Nakada, & H. Yano. 589, L101 (2003)
- NAKAKUBO-MARIMOTO, K. Variation of X-Ray Bright Point Number over the Solar Activity Cycle. H. Hara & K. Nakakubo-Marimoto. 589, 1062 (2003)
- NAKAMURA, RYOSUKE. Saturated Hydrocarbons in Comet 153P/Ikeya-Zhang: Ethane, Methane, and Monodeuterio-Methane. Hideyo Kawakita, Jun-ichi Watanabe, Daisuke Kinoshita, Masateru Ishiguro, & Ryosuke Nakamura, 590, 573 (2003)
- NAKASATO, NAOHITO. Three-dimensional Simulations of the Chemical and Dynamical Evolution of the Galactic Bulge. *Naohito Nakasato & Ken'ichi Nomoto*. 588, 842 (2003)
- NAKATA, FUMIAKI. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
- NANDY, DIBYENDU. Evidence That a Deep Meridional Flow Sets the Sunspot Cycle Period. David H. Hathaway, Dibyendu Nandy, Robert M. Wilson, & Edwin J. Reichmann. 589, 665 (2003)
- NASELSKY, PAVEL D. Non-Gaussianity of the Derived Maps from the First-Year Wilkinson Microwave Anisotropy Probe Data. Lung-Yih Chiang, Pavel D. Naselsky, Oleg V. Verkhodanov, & Michael J. Way. 590, L65 (2003)
- NAVARRO, JULIO F. Simulations of Galaxy Formation in a ACDM Universe. III. The Dissipative Formation of an Elliptical Galaxy. Andrés Meza, Julio F. Navarro, Matthias Steinmetz, & Vincent R. Eke. 590, 619 (2003)
- NEGUERUELA, I. See ISRAEL, G. L., et al. The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849—400910.
- NELSON, ANDREW F. On the Early Evolution of Forming Jovian Planets. I. Initial Conditions, Systematics, and Qualitative Comparisons to Theory. Andrew F. Nelson & Willy Benz. 589, 556 (2003)
- On the Early Evolution of Forming Jovian Planets. II. Analysis of Accretion and Gravitational Torques. *Andrew F. Nelson & Willy Benz.* 589, 578 (2003)
- NELSON, BRANT O. A Hubble Space Telescope/WFPC2 Snapshot Survey of 2MASS-selected Red QSOs. Andrew R. Marble, Dean C. Hines, Gary D. Schmidt, Paul S. Smith, Jason A. Surace, Lee Armus, Roc M. Cutri, & Brant O. Nelson. 590, 707 (2003)

- NEMETHY, P. See F/LCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- NESCI, ROBERTO. Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)
- NESS, N. F. Evolution of Magnetic Fields in Corotating Interaction Regions from 1 to 95 AU: Order to Chaos. L. F. Burlaga, C. Wang, J. D. Richardson, & N. F. Ness. 590, 554 (2003)
- NETT, JASON M. Spectroscopic and Spectropolarimetric Observations of V838 Monocerotis. John P. Wisniewski, Nancy D. Morrison, Karen S. Bjorkman, Anatoly S. Miroshnichenko, Amanda C. Gault, Jennifer L. Hoffman, Marilyn R. Meade, & Jason M. Nett. 588, 486 (2003)
- NEUFELD, DAVID A. Detections of OH toward the Extreme Carbon Star IRC +10216. K. E. Saavik Ford, David A. Neufeld, Paul F. Goldsmith, & Gary J. Melnick. 589, 430 (2003)
- Submillimeter Wave Astronomy Satellite Mapping Observations of Water Vapor around Sagittarius B2. David A. Neufeld, Edwin A. Bergin, Gary J. Melnick, & Paul F. Goldsmith. 590, 882 (2003)
- New, R. A Comparison of Low-Degree Solar p-Mode Parameters from BiSON and GONG: Underlying Values and Temporal Variations. R. Howe, W. J. Chaplin, Y. P. Elsworth, F. Hill, R. Komm, G. R. Isaak, & R. New. 588, 1204 (2003)
- Newberg, Heido Jo. See Yanny, Brian, et al. A Low-Latitude Halo Stream around the Milky Way.
- NG, KIN-WANG. Observational Strategies of Cosmic Microwave Background Temperature and Polarization Interferometry Experiments. Chan-Gyung Park, Kin-Wang Ng, Changbom Park, Guo-Chin Liu, & Keiichi Umetsu. 589, 67 (2003)
- NICASTRO, F. See FABBIANO, G., et al. The X-Ray-faint Emission of the Supermassive Nuclear Black Hole of IC 1459.
- NICASTRO, FABRIZIO. The Lack of Broad-Line Regions in Low Accretion Rate Active Galactic Nuclei as Evidence of Their Origin in the Accretion Disk. Fabrizio Nicastro, Andrea Martocchia, & Giorigo Matt. 589, L13 (2003)
- NICHOL, ROBERT C. Measuring σ₈ with Cluster Lensing: Biases from Unrelaxed Clusters. Graham P. Smith, Alastair C. Edge, Vincent R. Eke, Robert C. Nichol, Ian Smail, & Jean-Paul Kneib. 590, L79 (2003)
- NICHOLS, JOY. Chandra Observations of Associates of η Carinae. I. Luminosities. Nancy Remage Evans. Frederick D. Seward, Miriam I. Krauss, Takashi Isobe, Joy Nichols, Eric M. Schlegel, & Scott J. Wolk. 589, 509 (2003)
- NIEMEYER, J. C. On the Small-Scale Stability of Thermonuclear Flames in Type la Supernovae. F. K. Roepke, J. C. Niemeyer, & W. Hillenbrandt. 588, 952 (2003)
- NISHIURA, S. Discovery of Dust Trail of STARDUST Comet Sample Return Mission Target: 81P/Wild 2. M. Ishiguro, S. M. Kwon, Y. Sarugaku, S. Hasegawa, F. Usui, S. Nishiura, Y. Nakada, & H. Yano. 589, L101 (2003)
- NOGUCHI, TAKASHI. See KAMEGAI, KAZUHISA, et al. Distribution of the C ι Emission in the ρ Ophiuchi Dark Cloud.
- NOMOTO, KEN'ICHI. Three-dimensional Simulations of the Chemical and Dynamical Evolution of the Galactic Bulge. Naohito Nakasato & Ken'ichi Nomoto. 588, 842 (2003)
- NONINO, M. See WANG, J., et al. A Puzzling X-Ray Source Found in the *Chandra* Deep Field–South.
- NORD, M. Nonthermal Emission from the Arches Cluster (G0.121+0.017) and the Origin of γ-Ray Emission from 3EG J1746–2851. F. Yusef-Zadeh, M. Nord, M. Wardle, C. Law, C. Lang, & T. J. W. Lazio. 590, L103 (2003)
- NORDGREN, TYLER E. Theoretical Limb Darkening for Classical Cepheids. II. Corrections for the Geometric Baade-Wesselink Method. Massimo Marengo, Margarita Karovska, Dimitar D. Sasselov, Costas Papaliolios, John T. Armstrong, & Tyler E. Nordgren. 589, 968 (2003)
- NORDSIECK, KENNETH H. The Pleiades Reflection Nebula. I. Ultraviolet, Optical, and Far-Infrared Imaging Photometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 347 (2003)
- The Pleiades Reflection Nebula. II. Simple Model Constraints on Dust Properties and Scattering Geometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 362 (2003)
- NORIEGA-CRESPO, A. Warm Molecular Hydrogen and Ionized Neon in the HH 2 Outflow. Bertrand LeFloch, J. Cernicharo, S. Cabrit, A. Noriega-Crespo, A. Moro-Martin, & D. Cesarsky. 590, L41 (2003)
- NORMAN, C. See WANG, J., et al. A Puzzling X-Ray Source Found in the Chandra Deep Field–South.
- NORRIS, R. P. See GREENHILL, L. J., et al. A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy.

- NUTH, JOSEPH A., III. Zinc Crystal Growth in Microgravity. B. P. Michael, Joseph A. Nuth III, & Lembit U. Lilleleht. 590, 579 (2003)
- OASA, YUMIKO. Near-Infrared Imaging of Circumstellar Disk around Herbig Ae star HD 150193 A. Misato Fukagawa, Motohide Tamura, Yoichi Itoh, Saeko S. Hayashi, & Yumiko Oasa. 590, L49 (2003)
- O'BRIEN, K. Bowen Flourescence from the Companion Star in X1822-371.
 J. Casares, D. Steeghs, R. I. Hynes, P. A. Charles, & K. O'Brien. 590, 1041 (2003)
- O'CONNELL, ROBERT W. Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)
- ODENKIRCHEN, MICHAEL. See YANNY, BRIAN, et al. A Low-Latitude Halo Stream around the Milky Way.
- OFEK, E. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- OHASHI, NAGAYOSHI. Interaction between the Outflow and the Core in IRAM 04191+1522. Shigehisa Takakuwa, Nagayoshi Ohashi, & Naomi Hirano. 590, 932 (2003)
- OHISHI, MASATOSHI. See KAMEGAI, KAZUHISA, et al. Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud.
- OHISHI, MICHIKO. Dense Gas Clouds and the Unidentified EGRET Sources.

 Mark Walker, Masaki Mori, & Michiko Ohishi. 589, 810 (2003)
- OHTA, YASUHIRO. Evolution of the Cosmological Density Distribution Function from the Local Collapse Model. Yasuhiro Ohta, Issha Kayo, & Atsushi Taruya. 589, 1 (2003)
- OKA, TOMOHARU. See KAMEGAI, KAZUHISA, et al. Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud.
- OKADA, NORIO. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
- OKAMOTO, I. Global Asymptotic Solutions for Magnetohydrodynamic Jets and Winds. I. Okamoto. 589, 671 (2003)
- OKAMOTO, TAKASHI. Cluster Morphology as a Test of Different Cosmological Models. Tamon Suwa, Asao Habe, Kohji Yoshikawa, & Takashi Okamoto. 588, 7 (2003)
- OKAMURA, SADANORI. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
 - See IYE, MASANORI, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim1.5$.
- Окогокоv, V. A. Images of Astrophysical Masers and Their Variability in a Turbulent Medium: The 25 GHz Methanol Masers. A. M. Sobolev, W. D. Watson, & V. A. Okorokov. 590, 333 (2003)
- OMUKAI, KAZUYUKI. Formation of the First Stars by Accretion. Kazuyuki Omukai & Francesco Palla. 589, 677 (2003)
- O'NEIL, K. Further Discoveries of ¹²CO in Low Surface Brightness Galaxies. K. O'Neil, E. Schinnerer, & P. Hofner. 588, 230 (2003)
 - The First CO Map of a Low Surface Brightness Galaxy. K. O'Neil & E. Schinnerer. 588, L81 (2003)
- ONIFER, A. J. The Statistical Sobolev-Rosseland Mean and the Effects of Frequency Redistribution on Wolf-Rayet Wind Driving. A. J. Onifer & K. G. Gayley. 590, 473 (2003)
- Oosterbroek, T. See Israel, G. L., et al. The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849-400910.
- OSTRIKER, EVE C. Spectral Properties of Compressible Magnetohydrodynamic Turbulence from Numerical Simulations. *Jason G. Verstuto, Eve C. Ostriker, & James M. Stone.* 590, 858 (2003)
- OUCHI, MASAMI. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
- Owen, D. New Velocity Distribution for Cold Dark Matter in the Context of the Eddington Theory. J. D. Vergados & D. Owen. 589, 17 (2003)
- OZEKI, HIROYUKI. See KAMEGAI, KAZUHISA, et al. Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud.
- PADGETT, DEBORAH L. The Circumstellar Disk of the Butterfly Star in Taurus. Sebastian Wolf, Deborah L. Padgett, & Karl R. Stapelfeldt. 588, 373 (2003)
- Hubble Space Telescope WFPC2 Imaging of the Disk and Jet of HV Tauri C. Karl R. Stapelfeldt, François Ménard, Alan M. Watson, John E. Krist, Catherine Dougados, Deborah L. Padgett, & Wolfgang Brandner. 589, 410 (2003)

- PADOAN, PAOLO. The Spectral Correlation Function of Molecular Clouds: A Statistical Test for Theoretical Models. Paolo Padoan, Alyssa A. Goodman, & Mika Juvela. 588, 881 (2003)
- PADOVANI, PAOLO. What Types of Jets Does Nature Make? A New Population of Radio Quasars. *Paolo Padovani, Eric S. Perlman, Hermine Landt, Paolo Giommi, & Matteo Perri.* 588, 128 (2003)
- PAERELS, F. B. S. High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)
- PALLA, FRANCESCO. Formation of the First Stars by Accretion. Kazuyuki Omukai & Francesco Palla. 589, 677 (2003)
- PALMA, CHRISTOPHER. The Multiphase Absorption Systems toward PG 1206+459. Jie Ding, Jane C. Charlton, Christopher W. Churchill, & Christopher Palma. 590, 746 (2003)
- PALMER, PATRICK. A Sensitive Very Large Array Search for Small-Scale Glycine Emission toward OMC-1. J. M. Hollis, J. A. Pedelty, L. E. Snyder, P. R. Jewell, F. J. Lovas, Patrick Palmer, & S.-Y. Liu. 588, 353 (2003)
- PALTRINIERI, BARBARA. Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)
- PANAITESCU, A. See SCHAEFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
- PAPALIOLIOS, COSTAS. Theoretical Limb Darkening for Classical Cepheids. II. Corrections for the Geometric Baade-Wesselink Method. Massimo Marengo, Margarita Karovska, Dimitar D. Sasselov, Costas Papaliolios, John T. Armstrong, & Tyler E. Nordgren. 589, 968 (2003)
- PAPALOIZOU, J. C. B. Runaway Migration and the Formation of Hot Jupiters. F. S. Masset & J. C. B. Papaloizou. 588, 494 (2003)
- PAREDES, J. M. Discovery of a New Radio Galaxy within the Error Box of the Unidentified Gamma-Ray Source 3EG J1735–1500. J. A. Combi, G. E. Romero, J. M. Paredes, D. F. Torres, & M. Ribó. 588, 731 (2003)
- PARENTI, S. SOHO-Ulysses Spring 2000 Quadrature: Coronal Diagnostic Spectrometer and SUMER Results. S. Parenti, E. Landi, & B. J. I. Bromage. 590, 519 (2003)
- PARK, CHANGBOM. Observational Strategies of Cosmic Microwave Background Temperature and Polarization Interferometry Experiments. Chan-Gyung Park, Kin-Wang Ng, Changbom Park, Guo-Chin Liu, & Keiichi Umetsu. 589, 67 (2003)
- PARK, CHAN-GYUNG. Observational Strategies of Cosmic Microwave Background Temperature and Polarization Interferometry Experiments. Chan-Gyung Park, Kin-Wang Ng, Changbom Park, Guo-Chin Liu, & Keiichi Umetsu. 589, 67 (2003)
- PARK, Y. D. Sympathetic Coronal Mass Ejections. Y.-J. Moon, G. S. Choe, Haimin Wang, & Y. D. Park. 588, 1176 (2003)
- PARK, YOUSIN. Gravitational Lensing by Burkert Halos. Yousin Park & Henry C. Ferguson. 589, L65 (2003)
- PARKER, LEONARD. Cosmological Acceleration through Transition to Constant Scalar Curvature. Leonard Parker, William Komp, & Daniel A. T. Vanzella. 588, 663 (2003)
- PASCUCCI, I. The First Detailed Look at a Brown Dwarf Disk. I. Pascucci, D. Apai, Th. Henning, & C. P. Dullemond. 590, L111 (2003)
- PATEL, NIMESH. See TRINIDAD, MIGUEL A., et al. Observations of Water Masers and Radio Continuum Emission in AFGL 2591.
- Paul, J. See Mereghetti, S., et al. *Integral* and *XMM-Newton* Observations of the Weak Gamma-Ray Burst GRB 030227.
- PECK, A. B. The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348. A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
- PEDELTY, J. A. A Sensitive Very Large Array Search for Small-Scale Glycine Emission toward OMC-1. J. M. Hollis, J. A. Pedelty, L. E. Snyder, P. R. Jewell, F. J. Lovas, Patrick Palmer, & S.-Y. Liu. 588, 353 (2003)
- PEEBLES, P. J. E. Cosmological Origin of the Stellar Velocity Dispersions in Massive Early-Type Galaxies. Abraham Loeb & P. J. E. Peebles. 589, 29 (2003)
- PEGG, JENNIFER. Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)
- Peletier, Reynier F. The Near-Infrared Ca II Triplet–σ Relation for Bulges of Spiral Galaxies. *Jesús Falcón-Barroso, Reynier F. Peletier, Alexandre Vazdekis, & Marc Balcells.* 588, L17 (2003)

- Pellegrini, S. See Fabbiano, G., et al. The X-Ray-faint Emission of the Supermassive Nuclear Black Hole of IC 1459.
- PELLETIER, GUY. Particle Transport in Tangled Magnetic Fields and Fermi Acceleration at Relativistic Shocks. Martin Lemoine & Guy Pelletier. 589, L73 (2003)
- PEN, UE-LI. Measuring Feedback Using the Intergalactic Medium State and Evolution Inferred from the Soft X-Ray Background. Pengjie Zhang & Ue-Li Pen. 588, 704 (2003)
- Pence, W. D. Diffuse X-Ray Emission from M101. K. D. Kuntz, S. L. Snowden, W. D. Pence, & K. Mukai. 588, 264 (2003)
- PENN, M. J. Weak Infrared Molecular Lines Reveal Rapid Outflow in Cool Magnetic Sunspot Penumbral Fibrils. M. J. Penn, W. D. Cao, S. R. Walton, G. A. Chapman, & W. Livingston. 590, L119 (2003)
- PERCIVAL, S. The Distance to the Large Magellanic Cloud Cluster NGC 1866 and the Surrounding Field. M. Salaris, S. Percival, E. Brocato, G. Raimondo, & A. R. Walker. 588, 801 (2003)
- PERLMAN, ERIC S. What Types of Jets Does Nature Make? A New Population of Radio Quasars. Paolo Padovani, Eric S. Perlman, Hermine Landt, Paolo Giommi, & Matteo Perri. 588, 128 (2003)
- PERLMUTTER, SAUL. Multicolor Light Curves of Type Ia Supernovae on the Color-Magnitude Diagram: A Novel Step toward More Precise Distance and Extinction Estimates. Lifan Wang, Gerson Goldhaber, Greg Aldering, & Saul Perlmutter. 590, 944 (2003)
- PERNA, R. See ISRAEL, G. L., et al. The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849—400910.
- PERRETT, K. M. Substructure in the Andromeda Galaxy Globular Cluster System. K. M. Perrett, D. A. Stiff, D. A. Hanes, & T. J. Bridges. 589, 790 (2003)
- Perrett, Kathryn M. Disk-Bulge-Halo Models for the Andromeda Galaxy. Lawrence M. Widrow, Kathryn M. Perrett, & Sherry H. Suyu. 588, 311 (2003)
- PERRI, MATTEO. What Types of Jets Does Nature Make? A New Population of Radio Quasars. Paolo Padovani, Eric S. Perlman, Hermine Landt, Paolo Giommi, & Matteo Perri. 588, 128 (2003)
- Perrotta, F. Probing Dark Energy with the Cosmic Microwave Background:
 Projected Constraints from the Wilkinson Microwave Anisotropy Probe
 and Planck. Amedeo Balbi, C. Baccigalupi, F. Perrotta, S. Matarrese, &
 N. Vittorio. 588, L5 (2003)
- Peterson, J. R. High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)
- PETERSON, RUTH C. Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)
- Petre, R. Chandra Observation of the X-Ray Source Population of NGC 6946. S. S. Holt, E. M. Schlegel, U. Hwang, & R. Petre. 588, 792 (2003)
- Petrosian, V. See Schaefer, Bradley E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
- PETTINI, MAX. Rest-Frame Ultraviolet Spectra of $z\sim 3$ Lyman Break Galaxies. Alice E. Shapley, Charles C. Steidel, Max Pettini, & Kurt L. Adelberger. 588, 65 (2003)
- PHILLIPS, A. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- PHILLIPS, J. R. Testing Two Nuclear Physics Approximations Used in the Standard Leaky-Box Model for the Spallogenic Production of LiBeB. J. P. Kneller, J. R. Phillips, & T. P. Walker. 589, 217 (2003)
- PHILLIPS, K. J. H. Solar Flare Abundances of Potassium, Argon, and Sulphur. K. J. H. Phillips, J. Sylwester, B. Sylwester, & E. Landi. 589, L113 (2003)
- PHILLIPS, R. B. R Cassiopeiae: Relative Strengths of SiO Masers at 43 and 86 GHz. R. B. Phillips, A. H. Straughn, S. S. Doeleman, & C. J. Lonsdale. 588, L105 (2003)
- PICKETT, BRIAN K. The Thermal Regulation of Gravitational Instabilities in Protoplanetary Disks. Brian K. Pickett, Annie C. Mejía, Richard H. Durisen, Patrick M. Cassen, Donald K. Berry, & Robert P. Link. 590, 1060 (2003)
- PIERPAOLI, ELENA. Point Sources in the Wilkinson Microwave Anisotropy Probe Sky Maps. Elena Pierpaoli. 589, 58 (2003)
- PIETROPAOLO, E. Detection of Photospheric Impacts from Chromospheric Impulsive Events. P. F. Moretti, F. Berrilli, A. Sebastianelli, C. Briand, & E. Pietropaolo. 589, L109 (2003)

- PINER, B. GLENN. The Speed and Orientation of the Parsec-Scale Jet in 3C 279. B. Glenn Piner, Stephen C. Unwin, Ann E. Wehrle, Alma C. Zook, C. Megan Urry, & Diane M. Gilmore. 588, 716 (2003)
- PIRO, L. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- PIVOVAROFF, M. J. XMM-Newton Observations of PSR B1823—13: An Asymmetric Synchrotron Nebula around a Vela-like Pulsar. B. M. Gaensler, N. S. Schulz, V. M. Kaspi, M. J. Pivovaroff, & W. E. Becker. 588, 441 (2003)
- PIVOVAROFF, MICHAEL. The Pulsar Wind Nebula in G11.2—0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)
- POGGE, RICHARD W. Circumnuclear Dust in Nearby Active and Inactive Galaxies. II. Bars, Nuclear Spirals, and the Fueling of Active Galactic Nuclei. Paul Martini, Michael W. Regan, John S. Mulchaey, & Richard W. Pogge. 589, 774 (2003)
- POHL, M. EGRET Upper Limits on the High-Energy Gamma-Ray Emission of Galaxy Clusters. O. Reimer, M. Pohl, P. Sreekumar, & J. R. Mattox. 588, 155 (2003)
- POLETTO, GIANNINA. The Nascent Solar Wind: Origin and Acceleration. Luca Teriaca, Giannina Poletto, Marco Romoli, & Doug A. Biesecker. 588, 566 (2003)
- POLLACK, L. K. VLBI Polarimetry of 177 Sources from the Caltech–Jodrell Bank Flat-Spectrum Survey. L. K. Pollack, G. B. Taylor, & R. T. Zavala. 589, 733 (2003)
- POPESCU, MIRUNA D. Comparison of Total Solar Irradiance with NASA/National Solar Observatory Spectromagnetograph Data in Solar Cycles 22 and 23. Harrison P. Jones, Detrick D. Branston, Patricia B. Jones, & Miruna D. Popescu. 589, 658 (2003)
- PORTEGIES ZWART, SIMON. A Dynamical Model for the Globular Cluster G1. Holger Baumgardt, Junichiro Makino, Piet Hut, Steve McMillan, & Simon Portegies Zwart. 589, L25 (2003)
- POSSENTI, A. The Complex Hα Line Profile of the Bright Companion to PSR J1740-5340 in NGC 6397. E. Sabbi, R. Gratton, F. R. Ferraro, A. Bragaglia, A. Possenti, N. D'Amico, & F. Camino. 589, L41 (2003)
- A Search for Pulsars in Quiescent Soft X-Ray Transients. I. M. Burgay, L. Burderi, A. Possenti, N. D'Amico, R. N. Manchester, A. G. Lyne, F. Camilo, & S. Campana. 589, 902 (2003)
- POSTMAN, MARC. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- PRAVDO, S. H. See TEEGARDEN, B. J., et al. Discovery of a New Nearby Star.
 PREMINGER, DORA G. The Contribution of Faculae and Network to Long-Term Changes in the Total Solar Irradiance. Stephan R. Walton, Dora G. Preminger, & Gary A. Chapman. 590, 1088 (2003)
- PRESTAGE, N. P. Constraints on Coronal Mass Ejection Dynamics from Simultaneous Radio and White-Light Observations. M. J. Reiner, A. Vourlidas, O. C. St. Cyr, J. T. Burkepile, R. A. Howard, M. L. Kaiser, N. P. Prestage, & J.-L. Bougeret. 590, 533 (2003)
- PRICE, P. A. Discovery of GRB 020405 and Its Late Red Bump. P. A. Price, S. R. Kulkarni, E. Berger, D. W. Fox, J. S. Bloom, S. G. Djorgovski, D. A. Frail, T. J. Galama, F. A. Harrison, P. McCarthy, D. E. Reichart, R. Sari, S. A. Yost, H. Jerjen, K. Flint, A. Phillips, B. E. Warren, T. S. Axelrod, R. A. Chevallier, J. Holtzman, R. A. Kimble, B. P. Schmidt, J. C. Wheeler, F. Frontera, E. Costa, L. Piro, K. Hurley, T. Cline, C. Guidorzi, E. Montanari, E. Mazets, S. Golenetskii, I. Mitrofanov, D. Anfimov, A. Kozyrev, M. Litvak, A. Sanin, W. Boynton, C. Fellows, K. Harshman, C. Shinohara, A. Gal-Yam, E. Ofek, & Y. Lipkin, S89, 838 (2003) See FRAIL, D. A., et al. The Broadband Afterglow of GRB 980703.
- PRIGOZHIN, GREGORY Y. Refining Chandral ACIS Subpixel Event Repositioning Using a Backside-illuminated CCD Model. Jingqiang Li, Joel H. Kastner, Gregory Y. Prigozhin, & Norbert S. Schulz. 590, 586 (2003)
- PSALTIS, DIMITRIOS. Eddington-limited X-Ray Bursts as Distance Indicators. I. Systematic Trends and Spherical Symmetry in Bursts from 4U 1728–34. Duncan K. Galloway, Dimitrios Psaltis, Deepto Chakrabarty, & Michael P. Muno, 590, 999 (2003)
- PTAK, ANDREW F. Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped Ly α Absorption: Constraints on the Cosmic Neutral Gas-Phase Metallicity at Redshift $z\approx 0.4$. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003)

- PUTMAN, MARY E. Are Compact High-Velocity Clouds Extragalactic Objects? Philip R. Maloney & Mary E. Putman. 589, 270 (2003)
- PUZIA, THOMAS H. Some Constraints on the Effects of Age and Metallicity on the Low-Mass X-Ray Binary Formation Rate. Arunav Kundu, Thomas J. Maccarone, Stephen E. Zepf. & Thomas H. Puzia. 589, L81 (2003)
- Pyo, TAE-Soo. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri. Tae-Soo Pyo, Naoto Kobayashi, Masahiko Hayashi, Hiroshi Terada, Miwa Goto, Hideki Takami, Naruhisa Takato, Wolfgang Gaessler, Tomonori Usuda, Takuya Yamashita, Alan T. Tokunaga, Yutaka Hayano, Yukiko Kamata, Masanori Iye, & Yosuke Minowa. 590, 340 (2003)
- QIAN, Y. An Active Galactic Nucleus Sample with High X-Ray-to-Optical Flux Ratio from RASS. II. Optical Emission Line Properties of Seyfert 1 Type Active Galactic Nuclei. D. W. Xu, Stefanie Komossa, J. Y. Wei, Y. Qian, & X. Z. Zheng. 590, 73 (2003)
- QIAN, Y.-Z. Abundance Analysis of HE 2146-1247, a Star with Extremely Enhanced Neutron Capture Elements. Judith G. Cohen, Norbert Christlieb, Y.-Z. Qian, & G.J. Wasserburg. 588, 1082 (2003)
- Stellar Sources for Heavy r-Process Nuclei. Y.-Z. Qian & G. J. Wasserburg. 588, 1099 (2003)
- QIN, G. Nonlinear Collisionless Perpendicular Diffusion of Charged Particles. W. H. Matthaeus, G. Qin, J. W. Bieber, & G. P. Zank. 590, L53 (2003)
- QUIMBY, R. See SCHAEFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
- QUINTANA, H. See VIKHLININ, A., et al. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$.
- RAFFELT, GEORG G. Monte Carlo Study of Supernova Neutrino Spectra Formation. Mathias Th. Keil, Georg G. Raffelt, & Hans-Thomas Janka. 590, 971 (2003)
- RAIMONDO, G. The Distance to the Large Magellanic Cloud Cluster NGC 1866 and the Surrounding Field. M. Salaris, S. Percival, E. Brocato, G. Raimondo, & A. R. Walker. 588, 801 (2003)
- RAKOWSKI, CARA E. The Physics of Supernova Blast Waves. I. Kinematics of DEM L71 in the Large Magellanic Cloud. Parviz Ghavamian, Cara E. Rakowski, John P. Hughes, & T. B. Williams. 590, 833 (2003)
- The Physics of Supernova Remnant Blast Waves. II. Electron-Ion Equilibration in DEM L71 in the Large Magellanic Cloud. Cara E. Rakowski, Parviz Ghavamian, & John P. Hughes. 590, 846 (2003)
- RAMACHANDRAN, R. Toward an Empirical Theory of Pulsar Emission. VIII. Subbeam Circulation and the Polarization-Modal Structure of Conal Beams. Joanna M. Rankin & R. Ramachandran. 590, 411 (2003)
- RAMMACHER, W. Time-dependent Ionization in Dynamic Solar and Stellar Atmospheres. I. Methods. W. Rammacher & P. Ulmschneider. 589, 988 (2003)
- RANKIN, JOANNA M. Toward an Empirical Theory of Pulsar Emission. VIII. Subbeam Circulation and the Polarization-Modal Structure of Conal Beams. Joanna M. Rankin & R. Ramachandran. 590, 411 (2003)
- RANSOM, SCOTT M. A New Search Technique for Short Orbital Period Binary Pulsars. Scott M. Ransom, James M. Cordes, & Stephen S. Eikenberry. 589, 911 (2003)
- RAO, SANDHYA M. Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped Ly α Absorption: Constraints on the Cosmic Neutral Gas-Phase Metallicity at Redshift $z \approx 0.4$. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003)
- RASHBA, T. I. Large Mixing Angle Oscillations as a Probe of the Deep Solar Interior. C. Burgess, N. S. Dzhalilov, M. Maltoni, T. I. Rashba, V. B. Semikoz, M. A. Tórtola, & J. W. F. Valle. 588, L65 (2003)
- RAU, A. The 590 Day Long-Term Periodicity of the Microquasar GRS 1915+105. A. Rau, J. Greiner, & M. L. McCollough. 590, L37 (2003)
- RAYMOND, J. C. Ultraviolet Spectroscopy of Narrow Coronal Mass Ejections. D. Dobrzycka, J. C. Raymond, D. A. Biesecker, J. Li, & A. Ciaravella. 588, 586 (2003)
- RAYMOND, JOHN C. Optical and Far-Ultraviolet Spectroscopy of Knot D in the Vela Supernova Remnant. Ravi Sankrit, William P. Blair, & John C. Raymond. 589, 242 (2003)
- REDDY, BACHAM E. An Abundance Analysis of the New Carbon-Rich Proto-Planetary Nebula IRAS 06530-0213. Bruce J. Hrivnak & Bacham E. Reddy. 590, 1049 (2003)
- REDMAN, R. O. The G11.11-0.12 Infrared-dark Cloud: Anomalous Dust and a Nonmagnetic Isothermal Model. *Doug Johnstone, Jason D. Fiege, R. O. Redman, P. A. Feldman, & Sean J. Carey.* 588, L37 (2003)

- REGAN, MICHAEL W. Circumnuclear Dust in Nearby Active and Inactive Galaxies. II. Bars, Nuclear Spirals, and the Fueling of Active Galactic Nuclei. Paul Martini, Michael W. Regan, John S. Mulchaey, & Richard W. Pogge. 589, 774 (2003)
- REICH, WOLFGANG. The Distance to the Supernova Remnant CTB 87 and the Radial Velocity of the Perseus Arm toward l = 75°, Derived from H 1 and CO Observations. Roland Kothes, Wolfgang Reich, Tyler Foster, & Do-Young Byun. 588, 852 (2003)
- REICHART, D. E. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- REICHMANN, EDWIN J. Evidence That a Deep Meridional Flow Sets the Sunspot Cycle Period. David H. Hathaway, Dibyendu Nandy, Robert M. Wilson, & Edwin J. Reichmann. 589, 665 (2003)
- REID, I. N. See TEEGARDEN, B. J., et al. Discovery of a New Nearby Star.
- REIMER, O. EGRET Upper Limits on the High-Energy Gamma-Ray Emission of Galaxy Clusters. O. Reimer, M. Pohl, P. Sreekumar, & J. R. Mattox, 588, 155 (2003)
- REINER, M. J. Constraints on Coronal Mass Ejection Dynamics from Simultaneous Radio and White-Light Observations. M. J. Reiner, A. Vourlidas, O. C. St. Cyr, J. T. Burkepile, R. A. Howard, M. L. Kaiser, N. P. Prestage, & J.-L. Bougeret. 590, 533 (2003)
- REMBOLD, SANDRO B. A Method for Simultaneous Determination of A_V and R and Applications. Jorge R. Ducati, Daiana Ribeiro, & Sandro B. Rembold. 588, 344 (2003)
- REMIJAN, A. A Survey of Acetic Acid toward Hot Molecular Cores.

 A. Remijan, L. E. Snyder, D. N. Friedel, S.-Y. Liu, & R. Y. Shah. 590, 314 (2003)
- RETTIG, TERRENCE W. CO Emission from Disks around AB Aurigae and HD 141569: Implications for Disk Structure and Planet Formation Timescales. Sean D. Brittain, Terrence W. Rettig, Theodore Simon, Craig Kulesa, Michael A. DiSanti, & Neil Dello Russo. 588, 535 (2003)
- REYNOLDS, J. E. See GREENHILL, L. J., et al. A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy.
- REYNOLDS, R. J. A Search for Ionized Gas in the Draco and Ursa Minor Dwarf Spheroidal Galaxies. J. S. Gallagher, G. J. Madsen, R. J. Reynolds, E. K. Grebel, & T. A. Smecker-Hane. 588, 326 (2003)
- RHODES, JASON. Emission-Line Galaxies in the STIS Parallel Survey. II. Star Formation Density. Harry I. Teplitz, Nicholas R. Collins, Jonathan P. Gardner, Robert S. Hill, & Jason Rhodes. 589, 704 (2003)
- RIBAS, I. Intrinsic Properties of the Young Stellar Object SU Aurigae. L. E. DeWarf, J. F. Sepinsky, E. F. Guinan, I. Ribas, & I. Nadalin. 590, 357 (2003)
- RIBEIRO, DAIANA. A Method for Simultaneous Determination of A_V and R and Applications. Jorge R. Ducati, Daiana Ribeiro, & Sandro B. Rembold. 588, 344 (2003)
- RIBÓ, M. Discovery of a New Radio Galaxy within the Error Box of the Unidentified Gamma-Ray Source 3EG J1735-1500. J. A. Combi, G. E. Romero, J. M. Paredes, D. F. Torres, & M. Ribó. 588, 731 (2003)
- RICHARDSON, J. D. Evolution of Magnetic Fields in Corotating Interaction Regions from 1 to 95 AU: Order to Chaos. L. F. Burlaga, C. Wang, J. D. Richardson, & N. F. Ness. 590, 554 (2003)
- RICKER, G. R. See MUNO, M. P., et al. A Deep Chandra Catalog of X-Ray Point Sources toward the Galactic Center.
- RIESS, ADAM G. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- RIGBY, JANE R. High-Resolution STIS/Hubble Space Telescope and HIRES/Keck Spectra of Three Weak Mg II Absorbers toward PG 1643+706. Jane C. Charlton, Jie Ding, Stephanie G. Zonak, Christopher W. Churchill, Nicholas A. Bond, & Jane R. Rigby. 589, 111 (2003)
- RIX, H. W. See DADDI, E., et al. Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{\rm phot} < 4$ in the Hubble Deep Field–South.
- RIZZI, LUCA. RR Lyrae and Short-Period Variable Stars in the Dwarf Irregular Galaxy NGC 6822. Gisella Clementini, Enrico V. Held, Lara Baldacci, & Luca Rizzi. 588, L85 (2003)
 - Clues to the Evolution of the Carina Dwarf Spheroidal Galaxy from the Color Distribution of Its Red Giant Stars. Luca Rizzi, Enrico V. Held, Gianpaolo Bertelli, & Ivo Saviane. 589, L85 (2003)
- ROBBA, N. Coupling between Periodic and Aperiodic Variability in SAX J1808.4—3658. M. T. Menna, L. Burderi, L. Stella, N. Robba, & M. van der Klis. 589, 503 (2003)

ROBERTS, M. S. E. A Major Soft Gamma Repeater-like Outburst and Rotation Glitch in the No-longer-so-anomalous X-Ray Pulsar 1E 2259+586. V. M. Kaspi, F. P. Gavriil, P. M. Woods, J. B. Jensen, M. S. E. Roberts, & D. Chakrabarty, 588, L93 (2003)

ROBERTS, MALLORY S.E. The Pulsar Wind Nebula in G11.2-0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588,

992 (2003)

ROCKOSI, CONNIE M. See YANNY, BRIAN, et al. A Low-Latitude Halo Stream around the Milky Way.

RODRÍGUEZ, LUIS F. See TRINIDAD, MIGUEL A., et al. Observations of Water Masers and Radio Continuum Emission in AFGL 2591.

RODRIGUEZ, MONICA. [Fe IV] Emission in Ionized Nebulae. Monica Rodriguez. 590, 296 (2003)

- RODRÍGUEZ-MARTÍNEZ, MARIO. Technique for Detecting Warm-Hot Intergalactic Gas in Quasar Ultraviolet Spectra. Luc Binette, Mario Rodríguez-Martínez, Sinhue Haro-Corzo, & Isidro Ballinas. 590, 58
- ROEPKE, F. K. On the Small-Scale Stability of Thermonuclear Flames in Type Ia Supernovae. F. K. Roepke, J. C. Niemeyer, & W. Hillenbrandt. 588, 952 (2003)
- RÖTTGERING, H. J. A. See DADDI, E., et al. Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{\rm phot} < 4$ in the Hubble Deep Field-South.
- ROHWER, ERICH G. Accurate Laboratory Wavelengths of the Vacuum Ultraviolet $A(\Upsilon' = 3) - X(\Upsilon'' = 0)$ Band of $^{12}C^{17}O$ and $^{12}C^{18}O$. Christine Steinmann, Erich G. Rohwer, & Herbert Stafast. 590, L123
- ROMANI, ROGER W. The Gamma-Ray Blazar Content of the Northern Sky. David Sowards-Emmerd, Roger W. Romani, & Peter F. Michelson. 590,
- Giant Pulses from PSR B0540-69 in the Large Magellanic Cloud. Simon Johnston & Roger W. Romani. 590, L95 (2003)
- ROMERO, G. E. Discovery of a New Radio Galaxy within the Error Box of the Unidentified Gamma-Ray Source 3EG J1735-1500. J. A. Combi, G. E. Romero, J. M. Paredes, D. F. Torres, & M. Ribó. 588, 731 (2003)
- ROMERO, GUSTAVO E. Neutrinos from Accreting Neutron Stars. Luis A. Anchordoqui, Diego F. Torres, Thomas P. McCauley, Gustavo E. Romero, & Felix A. Aharonian. 589, 481 (2003)
- ROMOLI, MARCO. The Nascent Solar Wind: Origin and Acceleration. Luca Teriaca, Giannina Poletto, Marco Romoli, & Doug A. Biesecker. 588, 566
- ROOD, ROBERT T. Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)
 - Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)
- ROQUES, J. P. See MEREGHETTI, S., et al. Integral and XMM-Newton Observations of the Weak Gamma-Ray Burst GRB 030227.
- Ros, E. Jet Collimation in Action: Realignment on Kiloparsec Scales in 3C 279. D. C. Homan, M. L. Lister, K. I. Kllermann, M. H. Cohen, E. Ros, J. A. Zensus, M. Kadler, & R. C. Vermeulen. 589, L9 (2003)
- ROSADO, MARGARITA. Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martin A. Guerrero, & Margarita Rosado. 590, 306 (2003)
- ROSATI, P. See WANG, J., et al. A Puzzling X-Ray Source Found in the Chandra Deep Field-South.
- ROSATI, PIERO. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field-North with the Advanced Camera for Surveys.
- ROUSSEV, ILIA I. A Three-dimensional Flux Rope Model for Coronal Mass Ejections Based on a Loss of Equilibrium. Ilia 1. Roussev, Terry G. Forbes, Tamas I. Gombosi, Igor V. Sokolov, Darren L. DeZeeuw, & Joachim Birn. 588, L45 (2003)
- RUDER, H. X-Ray Pulses from Accretion Columns: Contributions to the Energy Dependence of the Pulse Shape. U. Kraus, C. Zahn, C. Weth, & H. Ruder. 590, 424 (2003)
- RUDNICK, G. See DADDI, E., et al. Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{\text{phot}} < 4$ in the Hubble Deep Field–South.

- RUDNICK, LAWRENCE. Lowering Infrared Cluster Magnetic Field Strengths: The Radio Galaxy Contributions. Lawrence Rudnick & Katherine M. Blundell. 588, 143 (2003)
- The First Measurement of Cassiopeia A's Forward Shock Expansion Rate. Tracey DeLaney & Lawrence Rudnick. 589, 818 (2003)
- RÜDIGER, GÜNTHER. Magnetic Star-Disk Coupling in Classical T Tauri Systems. Manfred Küker, Thomas Henning, & Günther Rüdiger. 589, 397
- See FALCONE, A., et al. Observation of GeV Solar Energetic RYAN, J. M. Particles from the 1997 November 6 Event Using Milagrito.
- RYU, DONGSU. The Effect of Cosmic-Ray Diffusion on the Parker Instability. Dongsu Ryu, Jongsoo Kim, Seung Soo Hong, & T. W. Jones. 589, 338 (2003)
- SAAVIK FORD, K. E. Detections of OH toward the Extreme Carbon Star IRC +10216. K. E. Saavik Ford, David A. Neufeld, Paul F. Goldsmith, & Gary J. Melnick. 589, 430 (2003)
- The Complex H α Line Profile of the Bright Companion to PSR J1740-5340 in NGC 6397. E. Sabbi, R. Gratton, F. R. Ferraro, A. Bragaglia, A. Possenti, N. D'Amico, & F. Camilo. 589, L41 (2003)
- SABRA, BASSEM M. The Nature of the Ultraviolet/X-Ray Absorber in PG 2302+029. Bassem M. Sabra, Fred Hamann, Buell T. Jannuzi, Jan M. George, & Joseph C. Shields. 590, 66 (2003)
- SAHA, A. The Cepheid Distance to NGC 5236 (M83) with the ESO Very Large Telescope. Frank Thim, G. A. Tammann, A. Saha, A. Dolphin, Allan Sandage, E. Tolstoy, & Lukas Labhardt. 590, 256 (2003)
- SAHAYANATHAN, S. A Continuous Injection Plasma Model for the X-Ray/Radio Knots in Kiloparsec-Scale Jets of Active Galactic Nuclei. Sahayanathan, R. Misra, A. K. Kembhavi, & C. L. Kaul. 588, L77 (2003)
- SAINT-JACQUES, D. J. See GOTO, MIWA, et al. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae.
- SAITO, SHUJI. See KAMEGAI, KAZUHISA, et al. Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud.
- SAITO, YOSHIHIKO. See IYE, MASANORI, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z \sim 1.5$.
- SAKAI, TAKESHI. See KAMEGAI, KAZUHISA, et al. Distribution of the C 1 Emission in the ρ Ophiuchi Dark Cloud.
- SAKAMOTO, TSUYOSHI. Kinematics of Tidal Debris from ω Centauri's Progenitor Galaxy. Arihiro Mizutani, Masashi Chiba, & Tsuyoshi Sakamoto. 589, L89 (2003)
- SAKAO, TARO. See NAGATA, SHIN'ICHI, et al. Spatial and Temporal Properties of Hot and Cool Coronal Loops.
- SALARIS, M. The Distance to the Large Magellanic Cloud Cluster NGC 1866 and the Surrounding Field. M. Salaris, S. Percival, E. Brocato, G. Raimondo, & A. R. Walker. 588, 801 (2003)
- SALARIS, MAURIZIO. The Initial Helium Content of Galactic Globular Cluster Stars from the R-Parameter: Comparison with the Cosmic Microwave Background Constraint. Santi Cassisi, Maurizio Salaris, & Alan W. Irwin. 588, 862 (2003)
- SÁNCHEZ-BLÁZQUEZ, P. Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González. 590, L91 (2003)
- SANDAGE, ALLAN. The Cepheid Distance to NGC 5236 (M83) with the ESO Very Large Telescope. Frank Thim, G. A. Tammann, A. Saha, A. Dolphin, Allan Sandage, E. Tolstoy, & Lukas Labhardt. 590, 256 (2003)
- SANDELL, GOERAN. NGC 7538S-a High-Mass Protostar with a Massive Rotating Disk. Goeran Sandell, Melvyn Wright, & James R. Forster. 590, L45 (2003)
- SANIN, A. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red
- SANKRIT, RAVI. Optical and Far-Ultraviolet Spectroscopy of Knot D in the Vela Supernova Remnant. Ravi Sankrit, William P. Blair, & John C. Raymond. 589, 242 (2003)
- SARGENT, A. I. Near-Infrared Interferometric Measurements of Herbig Ae/Be Stars. J. A. Eisner, B. F. Lane, R. L. Akeson, L. A. Hillenbrand, & A. I. Sargent. 588, 360 (2003)
- SARI, R. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red
 - See Frail, D. A., et al. The Broadband Afterglow of GRB 980703.
- SARIPALLI, LAKSHMI. Renewed Activity in the Radio Galaxy PKS B1545-321: Twin Edge-brightened Beams within Diffuse Radio Lobes. Lakshmi Saripalli, Ravi Subrahmanyan, & N. Udaya Shankar. 590, 181 (2003)

SARUGAKU, Y. Discovery of Dust Trail of STARDUST Comet Sample Return Mission Target: 81P/Wild 2. M. Ishiguro, S. M. Kwon, Y. Sarugaku, S. Hasegawa, F. Usui, S. Nishiura, Y. Nakada, & H. Yano. 589, L101 (2003)

SASAKI, SHIN. Mass-Temperature Relation of Galaxy Clusters: Implication from the Observed Luminosity-Temperature Relation and X-Ray Temperature Function. Mamoru Shimizu, Tetsu Kitayama, Shin Sasaki, & Tasushi Suto. 590, 197 (2003)

SASAO, TETSUO. See IMAI, HIROSHI, et al. The Three-dimensional Kinematics of Water Masers around the Semiregular Variable RT Virginis.

SASSELOV, DIMITAR D. Theoretical Limb Darkening for Classical Cepheids. II. Corrections for the Geometric Baade-Wesselink Method. Massimo Marengo, Margarita Karovska, Dimitar D. Sasselov, Costas Papaliolios, John T. Armstrong, & Tyler E. Nordgren. 589, 968 (2003)

SAURER, W. Detection of Nonrandom Galaxy Orientations in X-Ray Subclusters of the Coma Cluster. Manfred Kitzbichler & W. Saurer. 590, 120 (2022)

L9 (2003)

SAVIANE, IVO. Clues to the Evolution of the Carina Dwarf Spheroidal Galaxy from the Color Distribution of Its Red Giant Stars. Luca Rizzi, Enrico V. Held, Gianpaolo Bertelli, & Ivo Saviane. 589, L85 (2003)

SAWICKI, MARCIN. The Absorption and Emission Kinematics in the z = 0.7450 Mg II Absorber toward Q1331+17. Sara L. Ellison, Gabriela Mallén-Ornelas, & Marcin Sawicki. 589, 709 (2003)

SCANNAPIECO, EVAN. The Detectability of the First Stars and Their Cluster Enrichment Signatures. Evan Scannapieco, Raffaella Schneider, & Andrea Ferrara. 589, 35 (2003)

On the Spatial Correlations of Lyman Break Galaxies. Evan Scannapieco & Robert J. Thacker. 590, L69 (2003)

SCHAEFER, BRADLEY E. GRB 021004: A Massive Progenitor Star Surrounded by Shells. Bradley E. Schaefer, C. L. Gerardy, P. Höflich, A. Panaitescu, R. Quimby, J. Mader, G. J. Hill, P. Kumar, J. C. Wheeler, M. Eracleous, S. Sigurdsson, P. Mészáros, B. Zhang, L. Wang, F. V. Hessman, & V. Petrosian. 588, 387 (2003)

SCHECHTER, PAUL L. External Shear in Quadruply Imaged Lens Systems.

Gilbert P. Holder & Paul L. Schechter. 589, 688 (2003)

SCHERRER, P. H. Optimal Masks for Solar g-Mode Detection. R. Wachter, J. Schou, A. G. Kosovichev, & P. H. Scherrer. 588, 1199 (2003)

SCHINDLER, KARL. Models of Three-dimensional Flux Ropes. Joachim Birn, Terry G. Forbes, & Karl Schindler. 588, 578 (2003)

SCHINNERER, E. Further Discoveries of ¹²CO in Low Surface Brightness Galaxies. K. O'Neil, E. Schinnerer, & P. Hofner. 588, 230 (2003)

The First CO Map of a Low Surface Brightness Galaxy. K. O'Neil & E. Schinnerer. 588, L81 (2003)

SCHLEGEL, DAVID. See YANNY, BRIAN, et al. A Low-Latitude Halo Stream around the Milky Way.

SCHLEGEL, E. M. Chandra Observation of the X-Ray Source Population of NGC 6946. S. S. Holt, E. M. Schlegel, U. Hwang, & R. Petre. 588, 792 (2003)

SCHLEGEL, ERIC M. Chandra Observations of Associates of η Carinae. I. Luminosities. Nancy Remage Evans, Frederick D. Seward, Miriam I. Krauss, Takashi Isobe, Joy Nichols, Eric M. Schlegel, & Scott J. Wolk. 589, 509 (2003)

SCHMIDT, B. P. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.

SCHMIDT, GARY D. A Hubble Space Telescope/WFPC2 Snapshot Survey of 2MASS-selected Red QSOs. Andrew R. Marble, Dean C. Hines, Gary D. Schmidt, Paul S. Smith, Jason A. Surace, Lee Armus, Roc M. Cutri, & Brant O. Nelson. 590, 707 (2003)

SCHNEIDER, DONALD P. See YANNY, BRIAN, et al. A Low-Latitude Halo Stream around the Milky Way.

SCHNEIDER, RAFFAELLA. The Detectability of the First Stars and Their Cluster Enrichment Signatures. Evan Scannapieco, Raffaella Schneider, & Andrea Ferrara. 589, 35 (2003)

SCHOENFELDER, V. See MEREGHETTI, S., et al. Integral and XMM-Newton Observations of the Weak Gamma-Ray Burst GRB 030227.

SCHOU, J. Optimal Masks for Solar g-Mode Detection. R. Wachter, J. Schou, A. G. Kosovichev, & P. H. Scherrer, 588, 1199 (2003)

SCHRIJVER, CAROLUS J. A New Method to Constrain the Iron Abundance from Cooling Delays in Coronal Loops. Markus J. Aschwanden, Carolus J. Schrijver, Amy R. Winebarger, & Harry P. Warren. 588, L49 (2003)

Asterospheric Magnetic Fields and Winds of Cool Stars. Carolus J. Schrijver, Marc L. DeRosa, & Alan M. Title. 590, 493 (2003)

SCHULZ, N. S. XMM-Newton Observations of PSR B1823-13: An Asymmetric Synchrotron Nebula around a Vela-like Pulsar. B. M.

Gaensler, N. S. Schulz, V. M. Kaspi, M. J. Pivovaroff, & W. E. Becker. 588, 441 (2003)

Discrete X-Ray Signatures of a Photoionized Plasma above the Accretion Disk of the Neutron Star EXO 0748-676. M. A. Jimenez-Garate, N. S. Schulz, & H. L. Marshall. 590, 432 (2003)

SCHULZ, NORBERT S. Refining Chandral ACIS Subpixel Event Repositioning Using a Backside-illuminated CCD Model. Jingqiang Li, Joel H. Kastner, Gregory Y. Prigozhin, & Norbert S. Schulz. 590, 586 (2003)

SCIORTINO, S. Chandra Observations of the Young Open Cluster NGC 2516.
F. Damiani, E. Flaccomio, G. Micela, S. Sciortino, F.R. Harnden, Jr., S.S. Murray, S.J. Wolk, & R.D. Jeffries. 588, 1009 (2003)

SCOCCIMARRO, ROMÁN. Inferring the Linear Power Spectrum from the Lyα Forest. Matias Zaldarriaga, Román Scoccimarro, & Lam Hui. 590, 1 (2003)

SEAQUIST, E. R. A Multitransition CO Study of the Antennae Galaxies NGC 4038/9. Ming Zhu, E. R. Seaquist, & Nario Kuno. 588, 243 (2003) CO Molecular Gas in Infrared-luminous Galaxies. Lihong Yao, E. R.

Seaquist, Nario Kuno, & Loretta Dunne. 588, 771 (2003)

SEBASTIANELLI, A. Detection of Photospheric Impacts from Chromospheric Impulsive Events. P. F. Moretti, F. Berrilli, A. Sebastianelli, C. Briand, & E. Pietropaolo. 589, L109 (2003)

Sekiguchi, Maki. See Komiyama, Yutaka, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.

SEKIMOTO, YUTARO. See KAMEGAI, KAZUHISA, et al. Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud.

SEMBACH, K. R. Far Ultraviolet Spectroscopic Explorer Snapshot Survey of O v1 Variability in the Winds of 66 OB-Type Stars. N. Lehner, A. W. Fullerton, D. Massa, K. R. Sembach, & J. Zsargó. 589, 526 (2003)

SEMIKOZ, V. B. Large Mixing Angle Oscillations as a Probe of the Deep Solar Interior. C. Burgess, N. S. Dzhalilov, M. Maltoni, T. I. Rashba, V. B. Semikoz, M. A. Tórtola, & J. W. F. Valle. 588, L65 (2003)

SEN, A. A. Observational Constraints on Cardassian Expansion. S. Sen & A. A. Sen. 588, 1 (2003)

SEN, S. Observational Constraints on Cardassian Expansion. S. Sen & A. A. Sen. 588, 1 (2003)

SEPINSKY, J. F. Intrinsic Properties of the Young Stellar Object SU Aurigae. L. E. DeWarf, J. F. Sepinsky, E. F. Guinan, I. Ribas, & I. Nadalin. 590, 357 (2003)

SEWARD, FREDERICK D. Chandra Observations of Associates of η Carinae. I. Luminosities. Nancy Remage Evans, Frederick D. Seward, Miriam I. Krauss, Takashi Isobe, Joy Nichols, Eric M. Schlegel, & Scott J. Wolk. 589, 509 (2003)

SHAH, R. Y. A Survey of Acetic Acid toward Hot Molecular Cores. A. Remijan, L. E. Snyder, D. N. Friedel, S.-Y. Liu, & R. Y. Shah. 590, 314 (2003)

SHAKLAN, S. B. See TEEGARDEN, B. J., et al. Discovery of a New Nearby Star. SHAPIRO, IRWIN I. Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)

SHAPLEY, ALICE E. Rest-Frame Ultraviolet Spectra of z ~ 3 Lyman Break Galaxies. Alice E. Shapley, Charles C. Steidel, Max Pettini, & Kurt L. Adelberger. 588, 65 (2003)

SHARA, MICHAEL M. White Dwarf Sequences in Dense Star Clusters. *Jarrod R. Hurley & Michael M. Shara*. 589, 179 (2003)

SHEELEY, N. R., JR. Solar Wind Speed and Temperature outside 10 AU and the Termination Shock. Y. C. Whang, L. F. Burlaga, Y.-M. Wang, & N. R. Sheeley, Jr. 589, 635 (2003)

On the Fluctuating Component of the Sun's Large-Scale Magnetic Field. Y.-M. Wang & N. R. Sheeley, Jr. 590, 1111 (2003)

SHEINIS, A. I. Keck Spectroscopy of Four Quasi-stellar Object Host Galaxies. J. S. Miller & A. I. Sheinis. 588, L9 (2003)

SHELTON, R. L. Surprisingly Little O vi Emission Arises in the Local Bubble. R. L. Shelton. 589, 261 (2003)

SHEMATOVICH, V. I. A Coupled Dynamical and Chemical Model of Starless Cores of Magnetized Molecular Clouds. II. Chemical Differentiation. V. I. Shematovich, D. S. Wiebe, B. M. Shustov, & Zhi-Yun Li. 588, 894 (2003)

SHEN, B. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.

SHIBATA, KATSUNORI M. See IMAI, HIROSHI, et al. The Three-dimensional Kinematics of Water Masers around the Semiregular Variable RT Virginis.

- SHIELDS, J. C. Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)
- SHIELDS, JOSEPH. See BECHTOLD, JILL, et al. Chandra Survey of Radio-quiet, High-Redshift Quasars.
- SHIELDS, JOSEPH C. The Nature of the Ultraviolet/X-Ray Absorber in PG 2302+029. Bassem M. Sabra, Fred Hamann, Buell T. Jannuzi, Ian M. George, & Joseph C. Shields. 590, 66 (2003)
- SHIGEYAMA, TOSHIKAZY. Star Formation History of ω Centauri Imprinted in Elemental Abundance Patterns. *Takuji Tsujimoto & Toshikazy Shigeyama*. 590, 803 (2003)
- SHIMASAKU, KAZUHIRO. See KOMIYAMA, YUTAKA, et al. Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822.
 - See IYE, MASANORI, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim 1.5$.
- SHIMIZU, MAMORU. Mass-Temperature Relation of Galaxy Clusters: Implication from the Observed Luminosity-Temperature Relation and X-Ray Temperature Function. Mamoru Shimizu, Tetsu Kitayama, Shin Sasaki, & Tasushi Suto. 590, 197 (2003)
- SHIMIZY, TOSHIFUMI. See NAGATA, SHIN'ICHI, et al. Spatial and Temporal Properties of Hot and Cool Coronal Loops.
- SHINOHARA, C. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- SHIRAKI, TAKAHIRO. Dependence of H₂CO and CH₃OH Formation on Temperature and Thickness of H₂O-CO Ice during the Successive Hydrogenation of CO. Naoki Watanabe, Takahiro Shiraki, & Akira Kouchi. 588, L121 (2003)
- SHLOSMAN, ISAAC. Galaxy Formation in Triaxial Halos: Black Hole–Bulge–Dark Halo Correlation. Amr A. El-Zant, Isaac Shlosman, Mitchell C. Begelman, & Juhan Frank. 590, 641 (2003)
- Shoup, A. See Falcone, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- SHUSTOV, B. M. A Coupled Dynamical and Chemical Model of Starless Cores of Magnetized Molecular Clouds. II. Chemical Differentiation. V. I. Shematovich, D. S. Wiebe, B. M. Shustov, & Zhi-Yun Li. 588, 894 (2003)
- SIEMIGINOWSKA, A. See FABBIANO, G., et al. The X-Ray-faint Emission of the Supermassive Nuclear Black Hole of IC 1459.
- SIEMIGINOWSKA, ANETA. See BECHTOLD, JILL, et al. Chandra Survey of Radio-quiet, High-Redshift Quasars.
- SIGURDSSON, S. See SCHAEFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
- SILBERMANN, NANCY A. See LU, NANYAO, et al. Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features.
- SILICH, S. On the Rapidly Cooling Interior of Supergalactic Winds. S. Silich, G. Tenorio-Tagle, & C. Muñoz-Tuñón. 590, 791 (2003)
- SILLS, ALISON. Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)
- SIMARD, LUC. CI 1358+62: Characterizing the Physical Properties of Cluster Galaxies at z = 0.33. Kim-Vy H. Tran, Luc Simard, Garth Illingworth, & Marijn Franx. 590, 238 (2003)
- SIMON, ROBERT. See KRAEMER, KATHLEEN E., et al. Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study.
- SIMON, THEODORE. CO Emission from Disks around AB Aurigae and HD 141569: Implications for Disk Structure and Planet Formation Timescales. Sean D. Brittain, Terrence W. Rettig, Theodore Simon, Craig Kulesa, Michael A. DiSanti, & Neil Dello Russo. 588, 535 (2003)
- SIMPSON, CHRIS. See IYE, MASANORI, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim1.5$.
- SINNIS, G. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- SIRIANNI, MARCO. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- SJOUWERMAN, L. O. Discovery of Radio/X-Ray/Optical Resolved Supernova Remnants in the Center of the Andromeda Galaxy. Albert Kong, L. O. Sjouwerman, B. F. Williams, M. R. Garcia, & J. R. Dickel. 590, L21 (2003)

- SKINNER, STEPHEN L. Separating the X-Ray Emissions of UV Ceti A and B with Chandra. Marc Audard, Manuel Güdel, & Stephen L. Skinner. 589, 983 (2003)
- SKOUG, R. M. Evidence for a Suprathermal Seed Population of Heavy Ions Accelerated by Interplanetary Shocks near 1 AU. M. I. Desai, G. M. Mason, J. R. Dwyer, J. E. Mazur, R. E. Gold, S. M. Krimigis, C. W. Smith, & R. M. Skoug, 588, 1149 (2003)
- SMAIL, IAN. Measuring \(\sigma_8 \) with Cluster Lensing: Biases from Unrelaxed Clusters. Graham P. Smith, Alastair C. Edge, Vincent R. Eke, Robert C. Nichol, Ian Smail, & Jean-Paul Kneib. 590, L79 (2003)
- SMALDONE, L. A. Solar and Heliospheric Observatory/Coronal Diagnostic Spectrograph and Ground-based Observations of a Two-Ribbon Flare: Spatially Resolved Signatures of Chromospheric Evaporation. L. Teriaca, A. Falchi, G. Cauzzi, R. Falciani, L. A. Smaldone, & V. Andretta. 588, 596 (2003)
- SMALE, A. P. The Complete Z-Diagram of LMC X-2. A. P. Smale, J. Homan, & E. Kuulkers. 590, 1035 (2003)
- SMECKER-HANE, T. A. A Search for Ionized Gas in the Draco and Ursa Minor Dwarf Spheroidal Galaxies. J. S. Gallagher, G. J. Madsen, R. J. Reynolds, E. K. Grebel, & T. A. Smecker-Hane. 588, 326 (2003)
- SMITH, A. J. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- SMITH, BEVERLY J. Models of the Morphology, Kinematics, and Star Formation History of the Prototypical Collisional Starburst System NGC 7714/7715=Arp 284. Curtis Struck & Beverly J. Smith. 589, 157 (2003)
- SMITH, C. W. Evidence for a Suprathermal Seed Population of Heavy Ions Accelerated by Interplanetary Shocks near 1 AU. M. I. Desai, G. M. Mason, J. R. Dwyer, J. E. Mazur, R. E. Gold, S. M. Krimigis, C. W. Smith, & R. M. Skoug, 588, 1149 (2003)
- SMITH, D. M. Extended Emission from Cygnus X-3 Detected with Chandra. W. A. Heindl, J. A. Tomsick, R. Wijnands, & D. M. Smith. 588, L97 (2003)
- The Reuven Ramaty High Energy Solar Spectroscopic Imager Observation of the 1809 keV Line from Galactic ²⁶Al. D. M. Smith. 589, L55 (2003)
- SMITH, GRAHAM P. Measuring σ₈ with Cluster Lensing: Biases from Unrelaxed Clusters. Graham P. Smith, Alastair C. Edge, Vincent R. Eke, Robert C. Nichol, Ian Smail, & Jean-Paul Kneib. 590, L79 (2003)
- SMITH, L. J. A Tale of Two Stars: The Extreme O7 Iaf+ Supergiant AV 83 and the OC7.5 III(f) Star AV 69. D. John Hillier, T. Lanz, S. R. Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 588, 1039 (2003)
- SMITH, PAUL S. A Hubble Space Telescope/WFPC2 Snapshot Survey of 2MASS-selected Red QSOs. Andrew R. Marble, Dean C. Hines, Gary D. Schmidt, Paul S. Smith, Jason A. Surace, Lee Armus, Roc M. Cutri, & Brant O. Nelson. 590, 707 (2003)
- SNOWDEN, S. L. Diffuse X-Ray Emission from M101. K. D. Kuntz, S. L. Snowden, W. D. Pence, & K. Mukai. 588, 264 (2003)
- SNYDER, L. E. A Sensitive Very Large Array Search for Small-Scale Glycine Emission toward OMC-1. J. M. Hollis, J. A. Pedelty, L. E. Snyder, P. R. Jewell, F. J. Lovas, Patrick Palmer, & S.-Y. Liu. 588, 353 (2003)
 - A Survey of Acetic Acid toward Hot Molecular Cores. A. Remijan, L. E. Snyder, D. N. Friedel, S.-Y. Liu, & R. Y. Shah. 590, 314 (2003)
- SOBOLEV, A. M. Images of Astrophysical Masers and Their Variability in a Turbulent Medium: The 25 GHz Methanol Masers. A. M. Sobolev, W. D. Watson, & V. A. Okorokov. 590, 333 (2003)
- SOFIA, ULYSSES J. Dust Grain Size Distributions from MRN to MEM. Geoffrey C. Clayton, Michael J. Wolff, Ulysses J. Sofia, K. D. Gordon, & K. A. Misselt. 588, 871 (2003)
- SOKER, NOAM. Abundance Anomalies in the X-Ray Spectra of Planetary Nebulae NGC 7027 and BD +30°3639. Holly L. Maness, Saeqa D. Vrtilek, Joel H. Kastner, & Noam Soker. 589, 439 (2003)
 - Observed Non-Steady State Cooling and the Moderate Cluster Cooling Flow Model. Noam Soker & Laurence P. David. 589, 770 (2003)
- SOKOLOV, IGOR V. A Three-dimensional Flux Rope Model for Coronal Mass Ejections Based on a Loss of Equilibrium. *Ilia I. Roussev, Terry G. Forbes, Tamas I. Gombosi, Igor V. Sokolov, Darren L. DeZeeuw, & Joachim Birn.* 588, L45 (2003)
- SOLANKI, S. K. Determining the Inclination of the Rotation Axis of a Sun-like Star. L. Gizon & S. K. Solanki. 589, 1009 (2003)
- SOLOMON, P. M. The Molecular Disk in the Cloverleaf Quasar. S. Venturini & P. M. Solomon. 590, 740 (2003)

- SOMMER-LARSEN, JESPER. The Density Profile of Cluster-Scale Dark Matter Halos. Häkon Dahle, Steen Hannestad, & Jesper Sommer-Larsen. 588, L73 (2003)
- SONG, YONG-SEON. The Far-Infrared Background Correlation with Cosmic Microwave Background Lensing. Yong-Seon Song, Asantha Cooray, Lloyd Knox, & Matias Zaldarriaga. 590, 664 (2003)
- SOWARDS-EMMERD, DAVID. The Gamma-Ray Blazar Content of the Northern Sky. David Sowards-Emmerd, Roger W. Romani, & Peter F. Michelson. 590, 109 (2003)
- SPAANS, MARCO. Chemical Composition of the Early Universe. Martin Harwit & Marco Spaans. 589, 53 (2003)
- SPARKS, WILLIAM. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- Spergel, David N. Spiderweb Masks for High-Contrast Imaging. Robert J. Vanderbei, David N. Spergel, & N. Jeremy Kasdin. 590, 593 (2003)
- SPITE, FRANCOIS. See BARBUY, BEATRIZ, et al. Oxygen Abundance in the Template Halo Giant HD 122563.
- SPITE, MONIQUE. See BARBUY, BEATRIZ, et al. Oxygen Abundance in the Template Halo Giant HD 122563.
- SREEKUMAR, P. EGRET Upper Limits on the High-Energy Gamma-Ray Emission of Galaxy Clusters. O. Reimer, M. Pohl, P. Sreekumar, & J. R. Mattox. 588, 155 (2003)
- ST. CYR, O. C. Constraints on Coronal Mass Ejection Dynamics from Simultaneous Radio and White-Light Observations. M. J. Reiner, A. Vourlidas, O. C. St. Cyr, J. T. Burkepile, R. A. Howard, M. L. Kaiser, N. P. Prestage, & J.-L. Bougeret. 590, 533 (2003)
- STAFAST, HERBERT. Accurate Laboratory Wavelengths of the Vacuum Ultraviolet $A(\Upsilon'=3)-X(\Upsilon''=0)$ Band of $^{12}C^{17}O$ and $^{12}C^{18}O$. Christine Steinmann, Erich G. Rohwer, & Herbert Stafast. 590, L123 (2003)
- STAHLER, STEVEN W. Trapped Protostellar Winds and Their Breakout. Francis P. Wilkin & Steven W. Stahler. 590, 917 (2003)
- STAIRS, INGRID H. Geodetic Precession and Timing of the Relativistic Binary Pulsars PSR B1534+12 and PSR 1913+16. Maciej Konacki, Alex Wolszczan, & Ingrid H. Stairs. 589, 495 (2003)
- STANTON, J. F. The Radio Spectrum of the Phenyl Radical. M. C. McCarthy, R. J. McMahon, C. A. Gottlieb, J. B. Dudek, J. F. Stanton, & P. Thaddeus. 590, L61 (2003)
- STAPELFELDT, KARL R. The Circumstellar Disk of the Butterfly Star in Taurus. Sebastian Wolf, Deborah L. Padgett, & Karl R. Stapelfeldt. 588, 373 (2003)
- Hubble Space Telescope WFPC2 Imaging of the Disk and Jet of HV Tauri C. Karl R. Stapelfeldt, François Ménard, Alan M. Watson, John E. Krist, Catherine Dougados, Deborah L. Padgett, & Wolfgang Brandner. 589, 410 (2003)
- STAUFFER, JOHN R. New Low-Mass Members of the Taurus Star-forming Region. K. L. Luhman, Cesar Briceno, John R. Stauffer, Lee Hartmann, D. Barrado y Navascues, & Nelson Caldwell. 590, 348 (2003)
- STEEGHS, D. Bowen Flourescence from the Companion Star in X1822-371.
 J. Casares, D. Steeghs, R. I. Hynes, P. A. Charles, & K. O'Brien. 590, 1041 (2003)
- STEENBRUGGE, KATRIEN. Contrasting the Ultraviolet and X-Ray O vi Column Density Inferred for the Outflow in NGC 5548. Nahum Arav, Jelle Kaastra, Katrien Steenbrugge, Bert Brinkman, Rick Edelson, Kirk T. Korista, & Martijn de Kool. 590, 174 (2003)
- STEIDEL, CHARLES C. Rest-Frame Ultraviolet Spectra of $z\sim3$ Lyman Break Galaxies. Alice E. Shapley, Charles C. Steidel, Max Pettini, & Kurt L. Adelberger. 588, 65 (2003)
- STEINMANN, CHRISTINE. Accurate Laboratory Wavelengths of the Vacuum Ultraviolet $A(\Upsilon'=3)-X(\Upsilon''=0)$ Band of $^{12}\mathrm{C}^{17}\mathrm{O}$ and $^{12}\mathrm{C}^{18}\mathrm{O}$. Christine Steinmann, Erich G. Rohwer, & Herbert Stafast. 590, L123 (2003)
- STEINMETZ, MATTHIAS. Simulations of Galaxy Formation in a ACDM Universe. III. The Dissipative Formation of an Elliptical Galaxy. Andrés Meza, Julio F. Navarro, Matthias Steinmetz, & Vincent R. Eke. 590, 619 (2003)
- STELLA, L. Coupling between Periodic and Aperiodic Variability in SAX J1808.4—3658. M. T. Menna, L. Burderi, L. Stella, N. Robba, & M. van der Klis. 589, 503 (2003)
 - See Israel, G. L., et al. The Infrared Counterpart to the Anomalous X-Ray Pulsar IRXS J170849—400910.

- STEPANIAN, J. A. A Multiwavelength Study of Narrow-Line Seyfert 1 Galaxies from the Second Byurakan Survey. J. A. Stepanian, E. Benútez, Y. Krongold, I. Cruz-González, J. A. de Diego, V. Chavushyan, R. Mújica, D. Dultzin-Hacyan, & T. Verdugo. 588, 746 (2003)
- STEPHEN, J. B. BeppoSAX Average Spectra of Seyfert Galaxies. A. Malizia, L. Bassani, J. B. Stephen, G. Di Cocco, F. Fiore, & A. J. Dean. 589, L17 (2003)
- STIFF, D. A. Substructure in the Andromeda Galaxy Globular Cluster System. K. M. Perrett, D. A. Stiff, D. A. Hanes, & T. J. Bridges. 589, 790 (2003)
- ST-LOUIS, N. Discovery of Highly Dynamic Matter Enhancements along the Polar Axis and Equatorial Plane in the Luminous Blue Variable Binary HD 5980. A. Villar-Sbaffi, Anthony F. J. Moffat, & N. St-Louis. 590, 483 (2003)
- STONE, JAMES M. Spectral Properties of Compressible Magnetohydrodynamic Turbulence from Numerical Simulations. Jason G. Verstuto, Eve C. Ostriker, & James M. Stone. 590, 858 (2003)
- STOTHERS, RICHARD B. Turbulent Pressure in the Envelopes of Yellow Hypergiants and Luminous Blue Variables. *Richard B. Stothers*. 589, 960 (2003)
- STRAUGHN, A. H. R Cassiopeiae: Relative Strengths of SiO Masers at 43 and 86 GHz. R. B. Phillips, A. H. Straughn, S. S. Doeleman, & C. J. Lonsdale. 588, L105 (2003)
- STROLGER, L.-G. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type la Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- STRUCK, CURTIS. Models of the Morphology, Kinematics, and Star Formation History of the Prototypical Collisional Starburst System NGC 7714/7715=Arp 284. Curtis Struck & Beverly J. Smith. 589, 157 (2003)
- SUBBARAO, MARK. See YANNY, BRIAN, et al. A Low-Latitude Halo Stream around the Milky Way.
- SUBRAHMANYAN, RAVI. Renewed Activity in the Radio Galaxy PKS B1545—321: Twin Edge-brightened Beams within Diffuse Radio Lobes. Lakshmi Saripalli, Ravi Subrahmanyan, & N. Udaya Shankar. 590, 181 (2003)
- SUDARSKY, D. On the Indirect Detection of Sodium in the Atmosphere of the Planetary Companion to HD 209458. J. J. Fortney, D. Sudarsky, I. Hubeny, C. S. Cooper, W. B. Hubbard, A. Burrows, & J. I. Lunine. 589, 615 (2003)
- SUDARSKY, DAVID. Theoretical Spectra and Atmospheres of Extrasolar Giant Planets. *David Sudarsky*, Adam Burrows, & Ivan Hubeny. 588, 1121 (2003)
- SULLIVAN, G. W. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- SURACE, JASON A. A Hubble Space Telescope/WFPC2 Snapshot Survey of 2MASS-selected Red QSOs. Andrew R. Marble, Dean C. Hines, Gary D. Schmidt, Paul S. Smith, Jason A. Surace, Lee Armus, Roc M. Cutri, & Brant O. Nelson. 590, 707 (2003)
- SUTO, TASUSHI. Mass-Temperature Relation of Galaxy Clusters: Implication from the Observed Luminosity-Temperature Relation and X-Ray Temperature Function. *Mamoru Shimizu, Tetsu Kitayama, Shin Sasaki, & Tasushi Suto.* 590, 197 (2003)
- SUWA, TAMON. Cluster Morphology as a Test of Different Cosmological Models. Tamon Suwa, Asao Habe, Kohji Yoshikawa, & Takashi Okamoto. 588, 7 (2003)
- SUYU, SHERRY H. Disk-Bulge-Halo Models for the Andromeda Galaxy.

 Lawrence M. Widrow, Kathryn M. Perrett, & Sherry H. Suyu. 588, 311
 (2003)
- SVIDZINSKY, ANATOLY A. Radiation of Neutron Stars Produced by Superfluid Core. Anatoly A. Svidzinsky. 590, 386 (2003)
- SYLWESTER, B. Solar Flare Abundances of Potassium, Argon, and Sulphur. K. J. H. Phillips, J. Sylwester, B. Sylwester, & E. Landi. 589, L113 (2003)
- SYLWESTER, J. Solar Flare Abundances of Potassium, Argon, and Sulphur. K. J. H. Phillips, J. Sylwester, B. Sylwester, & E. Landi. 589, L113 (2003)
- SZOKOLY, G. See WANG, J., et al. A Puzzling X-Ray Source Found in the *Chandra* Deep Field-South.
- TACHIBANA, S. The Initial Abundance of ⁶⁰Fe in the Solar System. S. Tachibana & G. R. Huss. 588, L41 (2003)
- TAGLIAFERRI, G. The Resolved Fraction of the Cosmic X-Ray Background.
 A. Moretti, S. Campana, D. Lazzati, & G. Tagliaferri. 588, 696 (2003)

- TAKAKUWA, SHIGEHISA. Interaction between the Outflow and the Core in IRAM 04191+1522. Shigehisa Takakuwa, Nagayoshi Ohashi, & Naomi Hirano, 590, 932 (2003).
- TAKAMI, HIDEKI. See Goto, Miwa, et al. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae.

See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II]

Outflow from DG Tauri.

TAKATO, NARUHISA. See GOTO, MIWA, et al. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae.

See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.

TAM, CINDY R. The Pulsar Wind Nebula in G11.2-0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)

TAMMANN, G. A. The Cepheid Distance to NGC 5236 (M83) with the ESO Very Large Telescope. Frank Thim, G. A. Tammann, A. Saha, A. Dolphin, Allan Sandage, E. Tolstoy, & Lukas Labhardt. 590, 256 (2003)

TAMURA, MOTOHIDE. Near-Infrared Imaging of Circumstellar Disk around Herbig Ae star HD 150193 A. Misato Fukagawa, Motohide Tamura, Yoichi Itoh, Saeko S. Hayashi, & Yumiko Oasa, 590, L49 (2003)

- TAMURA, T. High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan, 590, 207 (2003)
- TANIGUCHI, Y. Cosmic Star Formation History Assocatied with Quasar Activity: An Approach Using the Black Hole-to-Bulge Mass Correlation. Y. P. Wang, T. Yamada, & Y. Taniguchi. 588, 113 (2003)
- TARBELL, T. Correlations on Arcsecond Scales between Chromospheric and Transition Region Emission in Active Regions. B. De Pontieu, T. Tarbell, & R. Erdélyi. 590, 502 (2003)
- TARUYA, ATSUSHI. Evolution of the Cosmological Density Distribution Function from the Local Collapse Model. Yasuhiro Ohta, Issha Kayo, & Atsushi Taruya. 589, 1 (2003)
- TATEMATSU, KEN'ICHI. See KAMEGAI, KAZUHISA, et al. Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud.
- TAYLOR, G. B. A View through Faraday's Fog: Parsec-Scale Rotation Measures in Active Galactic Nuclei. R. T. Zavala & G. B. Taylor. 589, 126 (2003)
 - VLBI Polarimetry of 177 Sources from the Caltech-Jodrell Bank Flat-Spectrum Survey. L. K. Pollack, G. B. Taylor, & R. T. Zavala. 589,
 - See Frail, D. A., et al. The Broadband Afterglow of GRB 980703.
- TAYLOR, R. The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebey, M. Fich, R. Taylor, Y. Cao, & T. Hancock. 590, 906 (2003)
- TEEGARDEN, B. J. Discovery of a New Nearby Star. B. J. Teegarden, S. H. Pravdo, M. Hicks, K. Lawrence, S. B. Shaklan, K. Covey, O. Fraser, S. L. Hawley, T. McGlynn, & I. N. Reid. 589, L51 (2003)
- TENORIO-TAGLE, G. On the Rapidly Cooling Interior of Supergalactic Winds. S. Silich, G. Tenorio-Tagle, & C. Muñoz-Tuñón. 590, 791 (2003)
- TEPLITZ, HARRY I. Emission-Line Galaxies in the STIS Parallel Survey. II. Star Formation Density. Harry I. Teplitz, Nicholas R. Collins, Jonathan P. Gardner, Robert S. Hill, & Jason Rhodes. 589, 704 (2003)
- TERADA, HIROSHI. See GOTO, MIWA, et al. Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae.
 - See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.
 - See IYE, MASANORI, et al. ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z \sim 1.5$.
- TERASHIMA, YUICHI. Detection of the "Active" Nucleus of M32. Luis C. Ho, Yuichi Terashima, & James S. Ulvestad. 589, 783 (2003)
- TEREBEY, S. The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebey, M. Fich, R. Taylor, Y. Cao, & T. Hancock. 590, 906 (2003)
- TERIACA, L. Solar and Heliospheric Observatory/Coronal Diagnostic Spectrograph and Ground-based Observations of a Two-Ribbon Flare: Spatially Resolved Signatures of Chromospheric Evaporation. L. Teriaca, A. Falchi, G. Cauzzi, R. Falciani, L. A. Smaldone, & V. Andretta. 588, 596 (2003)

- TERIACA, LUCA. The Nascent Solar Wind: Origin and Acceleration. Luca Teriaca, Giannina Poletto, Marco Romoli, & Doug A. Biesecker. 588, 566
- THACKER, ROBERT J. On the Spatial Correlations of Lyman Break Galaxies. Evan Scannapieco & Robert J. Thacker. 590, L69 (2003)
- THADDEUS, P. Precise Millimeter-Wave Laboratory Frequences for CS and C34S. C. A. Gottlieb, P. C. Myers, & P. Thaddeus. 588, 655 (2003)
- The Radio Spectrum of the Phenyl Radical. M. C. McCarthy, R. J. McMahon, C. A. Gottlieb, J. B. Dudek, J. F. Stanton, & P. Thaddeus. 590, L61 (2003)
- THIM, FRANK. The Cepheid Distance to NGC 5236 (M83) with the ESO Very Large Telescope. Frank Thim, G. A. Tammann, A. Saha, A. Dolphin, Allan Sandage, E. Tolstoy, & Lukas Labhardt. 590, 256 (2003)
- THOMPSON, SUSAN E. High-Resolution Spectroscopy of the Pulsating White Dwarf G29-38. Susan E. Thompson, J. C. Clemens, M. H. van Kerkwijk, & D. Koester, 589, 921 (2003)
- THUAN, TRINH X. New Light on the Stellar Populations in I Zw 18: Deep Near-Infrared Imaging. Leslie K. Hunt, Trinh X. Thuan, & Yuri I. Izotov. 588, 281 (2003)
- TIENGO, A. See MEREGHETTI, S., et al. Integral and XMM-Newton Observations of the Weak Gamma-Ray Burst GRB 030227.
- TIMMES, F. X. On Variations in the Peak Luminosity of Type Ia Supernovae. F. X. Timmes, Edward F. Brown, & J. W. Truran. 590, L83 (2003)
- TITLE, ALAN M. Asterospheric Magnetic Fields and Winds of Cool Stars. Carolus J. Schrijver, Marc L. DeRosa, & Alan M. Title. 590, 493 (2003)
- TOKUNAGA, ALAN T. See Pyo, TAE-Soo, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.
- TOLSTOY, E. The Cepheid Distance to NGC 5236 (M83) with the ESO Very Large Telescope. Frank Thim, G. A. Tammann, A. Saha, A. Dolphin, Allan Sandage, E. Tolstoy, & Lukas Labhardt. 590, 256 (2003)
- TOMSICK, J. A. Extended Emission from Cygnus X-3 Detected with Chandra. W. A. Heindl, J. A. Tomsick, R. Wijnands, & D. M. Smith. 588, L97 (2003)
- TONRY, JOHN L. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field-North with the Advanced Camera for Surveys.
- TORRELLES, JOSÉ M. See TRINIDAD, MIGUEL A., et al. Observations of Water Masers and Radio Continuum Emission in AFGL 2591.
- TORRES, CARLOS A.O. See BARBUY, BEATRIZ, et al. Oxygen Abundance in the Template Halo Giant HD 122563.
- TORRES, D. F. Discovery of a New Radio Galaxy within the Error Box of the Unidentified Gamma-Ray Source 3EG J1735-1500. J. A. Combi, G. E. Romero, J. M. Paredes, D. F. Torres, & M. Ribó. 588, 731 (2003)
- TORRES, DIEGO F. Neutrinos from Accreting Neutron Stars. Anchordoqui, Diego F. Torres, Thomas P. McCauley, Gustavo E. Romero, & Felix A. Aharonian. 589, 481 (2003)
- TÓRTOLA, M. A. Large Mixing Angle Oscillations as a Probe of the Deep Solar Interior. C. Burgess, N. S. Dzhalilov, M. Maltoni, T. I. Rashba, V. B. Semikoz, M. A. Tórtola, & J. W. F. Valle. 588, L65 (2003)
- TÓTH, GÁBOR. HARM: A Numerical Scheme for General Relativistic Magnetohydrodynamics. Charles F. Gammie, Jonathan C. McKinney, & Gábor Tóth. 589, 444 (2003).
- TOWNES, C. H. Interferometry on Mira in the Mid-Infrared; Cyclic Variability of the Continuum Diameter and the Effect of Spectral Lines on Apparent Size. J. Weiner, D. D. S. Hale, & C. H. Townes. 588, 1064 (2003)
- Asymptotic Giant Branch and Supergiant Stellar Diameters in the Mid-Infrared. J. Weiner, D. D. S. Hale, & C. H. Townes. 589, 976 (2003)
- TOWNSLEY, L. K. See Muno, M. P., et al. A Deep Chandra Catalog of X-Ray Point Sources toward the Galactic Center.
- TOWNSLEY, LEISA. Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martin A. Guerrero, & Margarita Rosado. 590, 306 (2003)
- TOZZI, P. See WANG, J., et al. A Puzzling X-Ray Source Found in the Chandra Deep Field-South.
- TRAN, HIEN D. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field-North with the Advanced Camera for Surveys.
- TRAN, KIM-VY H. Cl 1358+62: Characterizing the Physical Properties of Cluster Galaxies at z = 0.33. Kim-Vy H. Tran, Luc Simard, Garth Illingworth, & Marijn Franx. 590, 238 (2003)
- TREVESE, DARIO. Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)

- TRINCHIERI, G. See FABBIANO, G., et al. The X-Ray-faint Emission of the Supermassive Nuclear Black Hole of IC 1459.
- TRINIDAD, MIGUEL A. Observations of Water Masers and Radio Continuum Emission in AFGL 2591. Miguel A. Trinidad, Salvador Curiel, Jorge Cantó, Paola D'Alessio, Luis F. Rodríguez, José M. Torrelles, José F. Gómez, Nimesh Patel, & Paul T. P. Ho. 589, 386 (2003)
- TRUJILLO BUENO, J. Nonequilibrium CO Chemistry in the Solar Atmosphere. A. Asensio Ramos, J. Trujillo Bueno, M. Carlsson, & J. Cernicharo. 588, L61 (2003)
- TRURAN, J. W. On Variations in the Peak Luminosity of Type Ia Supernovae. F. X. Timmes, Edward F. Brown, & J. W. Truran. 590, L83 (2003)
- TSUCHIYA, TOSHIO. A Capture Scenario for Globular Cluster ω Centauri. Toshio Tsuchiya, Dana I. Dinescu, & Vladimir I. Korchagin. 589, L29 (2003)
- ΤSUJIMOTO, TAKUJI. Star Formation History of ω Centauri Imprinted in Elemental Abundance Patterns. Takuji Tsujimoto & Toshikazy Shigeyama. 590, 803 (2003)
- TSUNETA, SAKU. See NAGATA, SHIN'ICHI, et al. Spatial and Temporal Properties of Hot and Cool Coronal Loops.
- TSVETANOV, ZLATAN I. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- TUMER, T. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- TURNER, EDWIN L. Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Westey N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)
- TURNSHEK, DAVID A. Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped Ly α Absorption: Constraints on the Cosmic Neutral Gas-Phase Metallicity at Redshift $z\approx 0.4$. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003)
- TZIOUMIS, A. K. See GREENHILL, L. J., et al. A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy.
- UBERTINI, P. See MEREGHETTI, S., et al. *Integral* and *XMM-Newton* Observations of the Weak Gamma-Ray Burst GRB 030227.
- UDALSKI, A. The Optical Gravitational Lensing Experiment: Is Interstellar Extinction toward the Galactic Center Anomalous? A. Udalski. 590, 284 (2003)
- UDAYA SHANKAR, N. Renewed Activity in the Radio Galaxy PKS B1545-321: Twin Edge-brightened Beams within Diffuse Radio Lobes. Lakshmi Saripalli, Ravi Subrahmanyan, & N. Udaya Shankar. 590, 181 (2003)
- UENO, MASARU. Chandra Observations of a Nonthermal Supernova Remnant Candidate AX J1843.8—0352 and Its Surroundings. Masaru Ueno, Aya Bamba, Katsuji Koyama, & Ken Ebisawa. 588, 338 (2003)
- Diffuse Hard X-Ray Sources Discovered with the ASCA Galactic Plane Survey. Aya Bamba, Masaru Ueno, Katsuji Koyama, & Shigeo Yamauchi. 589, 253 (2003)
- Small-Scale Structure of the SN 1006 Shock with Chandra Observations. Aya Bamba, Ryo Yamazaki, Masaru Ueno, & Katsuji Koyama. 589, 827 (2003)
- ULMSCHNEIDER, P. Time-dependent Ionization in Dynamic Solar and Stellar Atmospheres. I. Methods. W. Rammacher & P. Ulmschneider. 589, 988 (2003)
- ULVESTAD, J. S. The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348. A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
- ULVESTAD, JAMES S. Detection of the "Active" Nucleus of M32. Luis C. Ho, Yuichi Terashima, & James S. Ulvestad. 589, 783 (2003)
- UMETSU, KEHCHI. Observational Strategies of Cosmic Microwave Background Temperature and Polarization Interferometry Experiments. Chan-Gyung Park, Kin-Wang Ng, Changbom Park, Guo-Chin Liu, & Keiichi Umetsu. 589, 67 (2003)
- UNWIN, STEPHEN C. The Speed and Orientation of the Parsec-Scale Jet in 3C 279. B. Glenn Piner, Stephen C. Unwin, Ann E. Wehrle, Alma C. Zook, C. Megan Urry, & Diane M. Gilmore. 588, 716 (2003)
- URRY, C. MEGAN. The Speed and Orientation of the Parsec-Scale Jet in 3C 279. B. Glenn Piner, Stephen C. Unwin, Ann E. Wehrle, Alma C. Zook, C. Megan Urry, & Diane M. Gilmore. 588, 716 (2003)

- USHOMIRSKY, GREG. The Crustal Rigidity of a Neutron Star, and Implications for PSR 1828–11 and Other Precession Candidates. Curt Cutler, Greg Ushomirsky, & Bennett Link. 588, 975 (2003)
- USUDA, TOMONORI. See PYO, TAE-SOO, et al. Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri.
- USUI, F. Discovery of Dust Trail of STARDUST Comet Sample Return Mission Target: 81P/Wild 2. M. Ishiguro, S. M. Kwon, Y. Sarugaku, S. Hasegawa, F. Usui, S. Nishiura, Y. Nakada, & H. Yano, 589, L101 (2003)
- UZDENSKY, DMITRI. Dynamics of Relativistic Reconnection. Maxim Lyutikov & Dmitri Uzdensky. 589, 893 (2003)
- VAGNETTI, FAUSTO. Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)
- VALLE, J. W. F. Large Mixing Angle Oscillations as a Probe of the Deep Solar Interior. C. Burgess, N. S. Dzhalilov, M. Maltoni, T. I. Rashba, V. B. Semikoz, M. A. Tórtola, & J. W. F. Valle. 588, L65 (2003)
- VALLÉE, JACQUES P. Magnetic Structure of a Dark Bok Globule. Jacques P. Vallée, Jane S. Greaves, & Jason D. Fiege. 588, 910 (2003)
- VALTAOIA, E. Testing of Inverse Compton Models for Active Galactic Nuclei with Gamma-Ray and Radio Observations. A. Lähteenmäki & E. Valtaoja. 590, 95 (2003)
- VAN DEN BERGH, SIDNEY. A New Approach to Galaxy Morphology. I. Analysis of the Sloan Digital Sky Survey Early Data Release. Roberto G. Abraham, Sidney van den Bergh, & Preethi Nair. 588, 218 (2003)
- Some Global Characteristics of the Galactic Globular Cluster System. Sidney van den Bergh. 590, 797 (2003)
- VANDERBEI, ROBERT J. Spiderweb Masks for High-Contrast Imaging. Robert J. Vanderbei, David N. Spergel, & N. Jeremy Kasdin. 590, 593 (2003)
- VAN DER KLIS, M. Coupling between Periodic and Aperiodic Variability in SAX J1808.4—3658. M. T. Menna, L. Burderi, L. Stella, N. Robba, & M. van der Klis. 589, 503 (2003)
- VAN DER KLIS, MICHIEL. Hard X-Ray Flares Preceding Soft X-Ray Outbursts in Aquila X-1: A Link between Neutron Star and Black Hole Transitions. Wenfei Yu, Marc Klein-Wolt, Rob Fender, & Michiel van der Klis. 589, L33 (2003)
- VAN DER WERF, P. P. See DADDI, E., et al. Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{\rm phot} < 4$ in the Hubble Deep Field–South.
- VAN DOKKUM, P. G. See DADDI, E., et al. Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{\rm phot} < 4$ in the Hubble Deep Field–South.
- VAN KERKWIJK, M. H. The Optical Counterpart of the Isolated Neutron Star RX J1605.3+3249. D. L. Kaplan, S. R. Kulkarni, & M. H. van Kerkwijk. 588, L33 (2003)
- High-Resolution Spectroscopy of the Pulsating White Dwarf G29-38. Susan E. Thompson, J. C. Clemens, M. H. van Kerkwijk, & D. Koester. 589, 921 (2003)
- The Nearby Neutron Star RX J0720.4—3125 from Radio to X-Rays. D. L. Kaplan, M. H. van Kerkwijk, H. L. Marshall, B. A. Jacoby, S. R. Kulkarni, & D. A. Frail. 590, 1008 (2003)
- VanSpeybroeck, L. See Vikhlinin, A., et al. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$.
- VANZELLA, DANIEL A. T. Cosmological Acceleration through Transition to Constant Scalar Curvature. Leonard Parker, William Komp, & Daniel A. T. Vanzella. 588, 663 (2003)
- VARELA, J. Quasars Clustering at $z\approx 3$ on Scales $\lesssim 10h^{-1}$ Mpc. L. Infante, J. Varela, M. Moles, G. Hertling, A. García, & F. Menanteau. 588, 90 (2003)
- VASISHT, GAUTAM. The Pulsar Wind Nebula in G11.2—0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)
- VAZDEKIS, ALEXANDRE. The Near-Infrared Ca II Triplet—σ Relation for Bulges of Spiral Galaxies. Jesús Falcón-Barroso, Reynier F. Peletier, Alexandre Vazdekis, & Marc Balcells. 588, L17 (2003)
- VENTURINI, S. The Molecular Disk in the Cloverleaf Quasar. S. Venturini & P. M. Solomon. 590, 740 (2003)
- VERDUGO, T. See STEPANIAN, J. A., et al. A Multiwavelength Study of Narrow-Line Seyfert I Galaxies from the Second Byurakan Survey.
- VERGADOS, J. D. New Velocity Distribution for Cold Dark Matter in the Context of the Eddington Theory. J. D. Vergados & D. Owen. 589, 17 (2003)

- VERKHODANOV, OLEG V. Non-Gaussianity of the Derived Maps from the First-Year Wilkinson Microwave Anisotropy Probe Data. Lung-Yih Chiang, Pavel D. Naselsky, Oleg V. Verkhodanov, & Michael J. Way. 590, L65 (2003)
- VERMEULEN, R. C. Jet Collimation in Action: Realignment on Kiloparsec Scales in 3C 279. D. C. Homan, M. L. Lister, K. I. Kllermann, M. H. Cohen, E. Ros, J. A. Zensus, M. Kadler, & R. C. Vermeulen. 589, L9 (2003)
- VERSTUTO, JASON G. Spectral Properties of Compressible Magnetohydrodynamic Turbulence from Numerical Simulations. Jason G. Verstuto, Eve C. Ostriker, & James M. Stone. 590, 858 (2003)
- VESTERGAARD, M. Quasar Elemental Abundances at High Redshifts.
 M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)
- VIKHLININ, A. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at z ~ 0.5. A. Vikhlinin, A. Voevodkin, C. R. Mullis, L. VanSpeybroeck, H. Quintana, B. R. McNamara, I. Gioia, A. Hornstrup, J. P. Henry, W. R. Forman, & C. Jones. 590, 15 (2003)
- VILLAR-SBAFFI, A. Discovery of Highly Dynamic Matter Enhancements along the Polar Axis and Equatorial Plane in the Luminous Blue Variable Binary HD 5980. A. Villar-Sbaffi, Anthony F. J. Moffat, & N. St-Louis. 590, 483 (2003)
- VITTORIO, N. Probing Dark Energy with the Cosmic Microwave Background: Projected Constraints from the Wilkinson Microwave Anisotropy Probe and Planck. Amedeo Balbi, C. Baccigalupi, F. Perrotta, S. Matarrese, & N. Vittorio. 588, L5 (2003)
- VOEVODKIN, A. See VIKHLININ, A., et al. Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$.
- VOGT, STEVEN S. A Sub-Saturn Mass Planet Orbiting HD 3651. Debra A. Fischer, R. Paul Butler, Geoffrey W. Marcy, Steven S. Vogt, & Gregory W. Henry. 590, 1081 (2003)
- VON KIENLIN, A. See MEREGHETTI, S., et al. Integral and XMM-Newton Observations of the Weak Gamma-Ray Burst GRB 030227.
- VOURLIDAS, A. Constraints on Coronal Mass Ejection Dynamics from Simultaneous Radio and White-Light Observations. M. J. Reiner, A. Vourlidas, O. C. St. Cyr, J. T. Burkepile, R. A. Howard, M. L. Kaiser, N. P. Prestage, & J.-L. Bougeret. 590, 533 (2003)
- VRTILEK, SAEQA D. Abundance Anomalies in the X-Ray Spectra of Planetary Nebulae NGC 7027 and BD +30°3639. Holly L. Maness, Saeqa D. Vrtilek, Joel H. Kastner, & Noam Soker. 589, 439 (2003)
- WACHTER, R. Optimal Masks for Solar g-Mode Detection. R. Wachter, J. Schou, A. G. Kosovichev, & P. H. Scherrer. 588, 1199 (2003)
- WAGNER, S. J. Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)
- WALBORN, NOLAN R. The Remarkable Alternating Spectra of the Of?p Star HD 191612. Nolan R. Walborn, Ian D. Howarth, Artemio Herrero, & Daniel J. Lennon. 588, 1025 (2003)
- WALKER, A. R. The Distance to the Large Magellanic Cloud Cluster NGC 1866 and the Surrounding Field. M. Salaris, S. Percival, E. Brocato, G. Raimondo, & A. R. Walker. 588, 801 (2003)
- WALKER, MARK. Dense Gas Clouds and the Unidentified EGRET Sources. Mark Walker, Masaki Mori, & Michiko Ohishi. 589, 810 (2003)
- WALKER, MARK A. Nanolensing of Gamma-Ray Bursts. Mark A. Walker & Geraint F. Lewis. 589, 844 (2003)
- WALKER, T. P. Testing Two Nuclear Physics Approximations Used in the Standard Leaky-Box Model for the Spallogenic Production of LiBeB. J. P. Kneller, J. R. Phillips, & T. P. Walker. 589, 217 (2003)
- WALTON, S. R. Weak Infrared Molecular Lines Reveal Rapid Outflow in Cool Magnetic Sunspot Penumbral Fibrils. M. J. Penn, W. D. Cao, S. R. Walton, G. A. Chapman, & W. Livingston. 590, L119 (2003)
- WALTON, STEPHAN R. The Contribution of Faculae and Network to Long-Term Changes in the Total Solar Irradiance. Stephan R. Walton, Dora G. Preminger, & Gary A. Chapman. 590, 1088 (2003)
- WANG, C. Evolution of Magnetic Fields in Corotating Interaction Regions from 1 to 95 AU: Order to Chaos. L. F. Burlaga, C. Wang, J. D. Richardson, & N. F. Ness. 590, 554 (2003)
- WANG, HAIMIN. Sympathetic Coronal Mass Ejections. Y.-J. Moon, G. S. Choe, Haimin Wang, & Y. D. Park. 588, 1176 (2003)
- WANG, J. A Puzzling X-Ray Source Found in the Chandra Deep Field-South. J. Wang, T. Yaqoob, G. Szokoly, R. Gilli, L. Kewley, V. Mainieri,

- M. Nonino, P. Rosati, P. Tozzi, W. Zheng, A. Zirm, & C. Norman. 590, L87 (2003)
- WANG, J. X. An Explanation for Large Enhancements of Nitrogen Relative to Carbon and Oxygen in Solar ³He-rich Events. T. X. Zhang & J. X. Wang. 588, L57 (2003)
- WANG, K. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- WANG, L. See SCHAEFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
- WANG, LIFAN. Multicolor Light Curves of Type Ia Supernovae on the Color-Magnitude Diagram: A Novel Step toward More Precise Distance and Extinction Estimates. Lifan Wang, Gerson Goldhaber, Greg Aldering, & Saul Perlmutter. 590, 944 (2003)
- WANG, Y. P. Cosmic Star Formation History Associated with Quasar Activity: An Approach Using the Black Hole-to-Bulge Mass Correlation. Y. P. Wang, T. Yamada, & Y. Taniguchi. 588, 113 (2003)
- WANG, Y.-M. Solar Wind Speed and Temperature outside 10 AU and the Termination Shock. Y. C. Whang, L. F. Burlaga, Y.-M. Wang, & N. R. Sheeley, Jr. 589, 635 (2003)
- On the Fluctuating Component of the Sun's Large-Scale Magnetic Field. Y.-M. Wang & N. R. Sheeley, Jr. 590, 1111 (2003)
- WARDLE, M. Nonthermal Emission from the Arches Cluster (G0.121+0.017) and the Origin of γ-Ray Emission from 3EG J1746–2851. F. Yusef-Zadeh, M. Nord, M. Wardle, C. Law, C. Lang, & T. J. W. Lazio. 590, L103 (2003)
- WARREN, B. E. See PRICE, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- WARREN, HARRY P. A New Method to Constrain the Iron Abundance from Cooling Delays in Coronal Loops. Markus J. Aschwanden, Carolus J. Schrijver, Amy R. Winebarger, & Harry P. Warren. 588, L49 (2003)
- WARREN, S. J. Semilinear Gravitational Lens Inversion. S. J. Warren & S. Dye. 590, 673 (2003)
- WASCKO, M. O. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- WASSERBURG, G. J. Stellar Sources for Heavy r-Process Nuclei. Y.-Z. Qian & G. J. Wasserburg. 588, 1099 (2003)
- WASSERBURG, G.J. Abundance Analysis of HE 2146–1247, a Star with Extremely Enhanced Neutron Capture Elements. Judith G. Cohen, Norbert Christlieb, Y.-Z. Qian, & G.J. Wasserburg. 588, 1082 (2003)
- WATANABE, JUN-ICHI. Saturated Hydrocarbons in Comet 153P/Ikeya-Zhang: Ethane, Methane, and Monodeuterio-Methane. Hideyo Kawakita, Jun-ichi Watanabe, Daisuke Kinoshita, Masateru Ishiguro, & Ryosuke Nakamura. 590, 573 (2003)
- WATANABE, NAOKI. Dependence of H₂CO and CH₃OH Formation on Temperature and Thickness of H₂O-CO Ice during the Successive Hydrogenation of CO. Naoki Watanabe, Takahiro Shiraki, & Akira Kouchi. 588, L121 (2003)
- WATSON, ALAN M. Hubble Space Telescope WFPC2 Imaging of the Disk and Jet of HV Tauri C. Karl R. Stapelfeldt, François Ménard, Alan M. Watson, John E. Krist, Catherine Dougados, Deborah L. Padgett, & Wolfgang Brandner. 589, 410 (2003)
- WATSON, PAUL. Fast Magnetic Reconnection via Jets and Current Micro-Sheets. Paul Watson & I. J. D. Craig. 590, L57 (2003)
- WATSON, W. D. Images of Astrophysical Masers and Their Variability in a Turbulent Medium: The 25 GHz Methanol Masers. A. M. Sobolev, W. D. Watson, & V. A. Okorokov. 590, 333 (2003)
- WATTS, PETER. Universal Behavior of Phase Correlations in Nonlinear Gravitational Clustering. Peter Watts, Peter Coles, & Adrian Melott. 589, L61 (2003)
- WAY, MICHAEL J. Non-Gaussianity of the Derived Maps from the First-Year Wilkinson Microwave Anisotropy Probe Data. Lung-Yih Chiang, Pavel D. Naselsky, Oleg V. Verkhodanov, & Michael J. Way. 590, L65 (2003)
- WEHRLE, ANN E. The Speed and Orientation of the Parsec-Scale Jet in 3C 279. B. Glenn Piner, Stephen C. Unwin, Ann E. Wehrle, Alma C. Zook, C. Megan Urry, & Diane M. Gilmore. 588, 716 (2003)
- WEI, J. Y. An Active Galactic Nucleus Sample with High X-Ray-to-Optical Flux Ratio from RASS. II. Optical Emission Line Properties of Seyfert 1 Type Active Galactic Nuclei. D. W. Xu, Stefanie Komossa, J. Y. Wei, Y. Qian, & X. Z. Zheng. 590, 73 (2003)
- WEINER, J. Interferometry on Mira in the Mid-Infrared; Cyclic Variability of the Continuum Diameter and the Effect of Spectral Lines on Apparent Size. J. Weiner, D. D. S. Hale, & C. H. Townes. 588, 1064 (2003)

- Asymptotic Giant Branch and Supergiant Stellar Diameters in the Mid-Infrared. J. Weiner, D. D. S. Hale, & C. H. Townes. 589, 976 (2003)
- WEINGARTNER, JOSEPH C. Radiative Torques on Interstellar Grains. III.

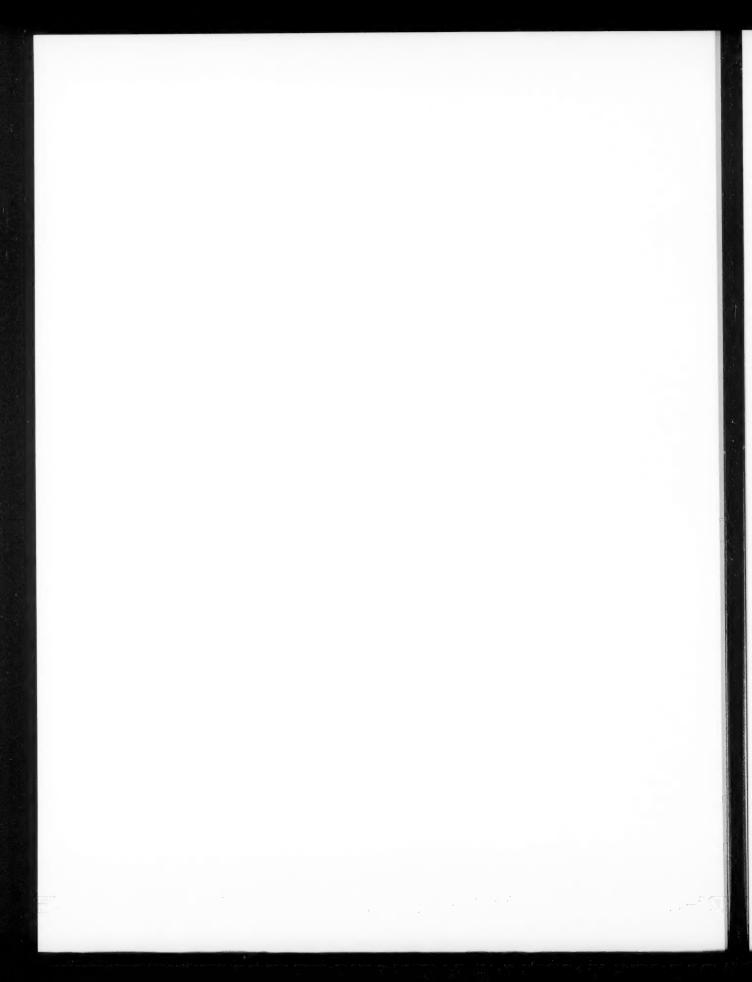
 Dynamics with Thermal Relaxation. Joseph C. Weingartner & B. T.

 Draine. 589, 289 (2003)
- WEISS, NIGEL. On the Interaction between Convection and Magnetic Fields. Fausto Cattaneo, Thierry Emonet, & Nigel Weiss. 588, 1183 (2003)
- WELSCH, B. T. Magnetic Helicity Injection by Horizontal Flows in the Quiet Sun. I. Mutual-Helicity Flux. B. T. Welsch & D. W. Longcope. 588, 620 (2003)
- WERNER, MICHAEL W. See LU, NANYAO, et al. Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features.
- WESTERHOFF, S. See FALCONE, A., et al. Observation of GeV Solar Energetic Particles from the 1997 November 6 Event Using Milagrito.
- WETH, C. X-Ray Pulses from Accretion Columns: Contributions to the Energy Dependence of the Pulse Shape. U. Kraus, C. Zahn, C. Weth, & H. Ruder. 590, 424 (2003)
- WHANG, Y. C. Solar Wind Speed and Temperature outside 10 AU and the Termination Shock. Y. C. Whang, L. F. Burlaga, Y.-M. Wang, & N. R. Sheeley, Jr. 589, 635 (2003)
- WHEELER, J. C. See SCHAEFER, BRADLEY E., et al. GRB 021004: A Massive Progenitor Star Surrounded by Shells.
 - See Price, P. A., et al. Discovery of GRB 020405 and Its Late Red Bump.
- WHITE, RICHARD L. See BLAKESLEE, JOHN P., et al. Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys.
- WHITE, S. M. Quasi-periodic Pulsations in a Solar Microwave Burst. V. V. Grechnev, S. M. White, & M. R. Kundu. 588, 1163 (2003)
- WHITNEY, BARBARA. See KURASZKIEWICZ, JOANNA K., et al. The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies.
- WIDROW, LAWRENCE M. Disk-Bulge-Halo Models for the Andromeda Galaxy. Lawrence M. Widrow, Kathryn M. Perrett, & Sherry H. Suyu. 588, 311 (2003)
- WIEBE, D. S. A Coupled Dynamical and Chemical Model of Starless Cores of Magnetized Molecular Clouds. II. Chemical Differentiation. V. I. Shematovich, D. S. Wiebe, B. M. Shustov, & Zhi-Yun Li. 588, 894 (2003)
- WIJANDS, RUDY. An XMM-Newton Observation during the 2000 Outburst of SAX J1808.4—3658. Rudy Wijands. 588, 425 (2003)
- WIJNANDS, R. Extended Emission from Cygnus X-3 Detected with Chandra. W. A. Heindl, J. A. Tomsick, R. Wijnands, & D. M. Smith. 588, L97 (2003)
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- Saturated Hydrocarbons in Comet 153P/Ikeya-Zhang: Ethane, Methane, and Monodeuterio-Methane. Hideyo Kawakita, Jun-ichi Watanabe, Daisuke Kinoshita, Masateru Ishiguro, & Ryosuke Nakamura. 590, 573 (2003)

COMETS: INDIVIDUAL

Name: 153P/Ikeya-Zhang

Saturated Hydrocarbons in Comet 153P/Ikeya-Zhang: Ethane, Methane, and Monodeuterio-Methane. Hideyo Kawakita, Jun-ichi Watanabe, Daisuke Kinoshita, Masateru Ishiguro, & Ryosuke Nakamura. 590, 573 (2003)

Name: Wild 2

Discovery of Dust Trail of STARDUST Comet Sample Return Mission Target: 81P/Wild 2. M. Ishiguro, S. M. Kwon, Y. Sarugaku, S. Hasegawa, F. Usui, S. Nishiura, Y. Nakada, & H. Yano. 589, L101 (2003)

CONDUCTION

Suppression of Fast Reconnection by Magnetic Shear. Fabian Heitsch & Ellen G. Zweibel. 590, 291 (2003)

CONVECTION

On the Interaction between Convection and Magnetic Fields. Fausto Cattaneo, Thierry Emonet, & Nigel Weiss. 588, 1183 (2003)

COSMOLOGY: COSMIC MICROWAVE BACKGROUND

- Observational Constraints on Cardassian Expansion. S. Sen & A. A. Sen. 588, 1 (2003)
- Probing Dark Energy with the Cosmic Microwave Background: Projected Constraints from the Wilkinson Microwave Anisotropy Probe and Planck. Amedeo Balbi, C. Baccigalupi, F. Perrotta, S. Matarrese, & N. Vittorio. 588, L5 (2003)
- Cosmological Acceleration through Transition to Constant Scalar Curvature. Leonard Parker, William Komp, & Daniel A. T. Vanzella. 588, 663 (2003)

- Point Sources in the Wilkinson Microwave Anisotropy Probe Sky Maps. Elena Pierpaoli. 589, 58 (2003)
- Observational Strategies of Cosmic Microwave Background Temperature and Polarization Interferometry Experiments. Chan-Gyung Park, Kin-Wang Ng, Changbom Park, Guo-Chin Liu, & Keiichi Umetsu. 589, 67 (2003)
- Non-Gaussianity of the Derived Maps from the First-Year Wilkinson Microwave Anisotropy Probe Data. Lung-Yih Chiang, Pavel D. Naselsky, Oleg V. Verkhodanov, & Michael J. Way. 590, L65 (2003)

COSMOLOGY: COSMOLOGICAL PARAMETERS

- Cluster Morphology as a Test of Different Cosmological Models. *Tamon Suwa, Asao Habe, Kohji Yoshikawa, & Takashi Okamoto.* 588, 7 (2003)
- The Amplitude of Mass Fluctuations. Paul Bode & Neta A. Bahcall. 588, L1 (2003)
- Cosmological Acceleration through Transition to Constant Scalar Curvature. Leonard Parker, William Komp, & Daniel A. T. Vanzella, 588, 663 (2003)
- Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at z ~ 0.5. A. Vikhlinin, A. Voevodkin, C. R. Mullis, L. VanSpeybroeck, H. Quintana, B. R. McNamara, I. Gioia, A. Hornstrup, J. P. Henry, W. R. Forman, & C. Jones. 590, 15 (2003)
- Multicolor Light Curves of Type Ia Supernovae on the Color-Magnitude Diagram: A Novel Step toward More Precise Distance and Extinction Estimates. Lifan Wang, Gerson Goldhaber, Greg Aldering, & Saul Perlmutter. 590, 944 (2003)

COSMOLOGY: DARK MATTER

- A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy. Jan T. Kleyna, Mark I. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 588, L21 (2003)
- Mass-Temperature Relation of Galaxy Clusters: Implication from the Observed Luminosity-Temperature Relation and X-Ray Temperature Function. Mamoru Shimizu, Tetsu Kitayama, Shin Sasaki, & Tasushi Suto. 590, 197 (2003)

COSMOLOGY: DIFFUSE RADIATION

- The Resolved Fraction of the Cosmic X-Ray Background. A. Moretti, S. Campana, D. Lazzati, & G. Tagliaferri. 588, 696 (2003)
- The Far-Infrared Background Correlation with Cosmic Microwave Background Lensing. Yong-Seon Song, Asantha Cooray, Lloyd Knox, & Matias Zaldarriaga. 590, 664 (2003)

COSMOLOGY: DISTANCE SCALE

- The Cepheid Distance to NGC 5236 (M83) with the ESO Very Large Telescope. Frank Thim, G. A. Tammann, A. Saha, A. Dolphin, Allan Sandage, E. Tolstoy, & Lukas Labhardt. 590, 256 (2003)
- Multicolor Light Curves of Type Ia Supernovae on the Color-Magnitude Diagram: A Novel Step toward More Precise Distance and Extinction Estimates. *Lifan Wang, Gerson Goldhaber, Greg Aldering, & Saul Perlmutter.* 590, 944 (2003)

COSMOLOGY: EARLY UNIVERSE

Was the Universe Reionized by Massive Metal-free Stars? J. Stuart B. Wyithe & Abraham Loeb. 588, L69 (2003)

COSMOLOGY: LARGE-SCALE STRUCTURE OF UNIVERSE

- Mass of Clusters in Simulations. Andrea V. Macciò, Giuseppe Murante, & Silvio P. Bonometto. 588, 35 (2003)
- Detection of Strong Clustering of Red K-selected Galaxies at 2 < z_{phot} < 4 in the Hubble Deep Field–South. E. Daddi, H. J. A. Röngering, I. Labbé, G. Rudnick, M. Franx, A. F. M. Moorwood, H. W. Rix, P. P. van der Werf, & P. G. van Dokkum. 588, 50 (2003)
- Quasars Clustering at $z\approx 3$ on Scales $\lesssim 10h^{-1}$ Mpc. L. Infante, J. Varela, M. Moles, G. Herlling, A. García, & F. Menanteau. 588, 90 (2003)
- Measuring Feedback Using the Intergalactic Medium State and Evolution Inferred from the Soft X-Ray Background. Pengjie Zhang & Ue-Li Pen. 588, 704 (2003)
- Evolution of the Cosmological Density Distribution Function from the Local Collapse Model. Yasuhiro Ohta, Issha Kayo, & Atsushi Taruya. 589, 1 (2003)
- New Velocity Distribution for Cold Dark Matter in the Context of the Eddington Theory. J. D. Vergados & D. Owen. 589, 17 (2003)
- Correlation between Galaxies and Quasi-stellar Objects in the Sloan Digital Sky Survey: A Signal from Gravitational Lensing Magnification? Enrique Gaztañaga. 589, 82 (2003)
- Inferring the Linear Power Spectrum from the Lyα Forest. Matias Zaldarriaga, Román Scoccimarro, & Lam Hui. 590, 1 (2003)

- Technique for Detecting Warm-Hot Intergalactic Gas in Quasar Ultraviolet Spectra. Luc Binette, Mario Rodríguez-Martínez, Sinhue Haro-Corzo, & Isidro Ballinas. 590, 58 (2003)
- Cluster Formation Rate in Models with Dark Energy. Spyros Basilakos. 590, 636 (2003)
- Spatial and Dynamical Biases in Velocity Statistics of Galaxies. Kohji Yoshikawa, Y. P. Jing, & Gerhard Börner. 590, 654 (2003)
- On the Spatial Correlations of Lyman Break Galaxies. Evan Scannapieco & Robert J. Thacker. 590, L69 (2003)
- Measuring σ₈ with Cluster Lensing: Biases from Unrelaxed Clusters. Graham P. Smith, Alastair C. Edge, Vincent R. Eke, Robert C. Nichol, Ian Smail. & Jean-Paul Kneib. 590, L79 (2003)

COSMOLOGY: MISCELLANEOUS

- Disk-Bulge-Halo Models for the Andromeda Galaxy. Lawrence M. Widrow, Kathryn M. Perrett, & Sherry H. Suyu. 588, 311 (2003)
- The Initial Helium Content of Galactic Globular Cluster Stars from the R-Parameter: Comparison with the Cosmic Microwave Background Constraint. Santi Cassisi, Maurizio Salaris, & Alan W. Irwin. 588, 862 (2003)
- Chemical Composition of the Early Universe. Martin Harwit & Marco Spaans. 589, 53 (2003)

COSMOLOGY: OBSERVATIONS

- Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{\text{phot}} < 4$ in the Hubble Deep Field–South. E. Daddi, H. J. A. Röttgering, I. Labbé, G. Rudnick, M. Franx, A. F. M. Moorwood, H. W. Rix, P. P. van der Werf, & P. G. van Dokkum. 588, 50 (2003)
- Rest-Frame Ultraviolet Spectra of z ~ 3 Lyman Break Galaxies. Alice E. Shapley, Charles C. Steidel, Max Pettini, & Kurt L. Adelberger. 588, 65 (2003)
- A Submillimeter and Radio Survey of Gamma-Ray Burst Host Galaxies: A Glimpse into the Future of Star Formation Studies. E. Berger, L. L. Cowie, S. R. Kulkarni, D. A. Frail, H. Aussel, & A. J. Barger. 588, 99 (2003)
- Probing Dark Energy with the Cosmic Microwave Background: Projected Constraints from the Wilkinson Microwave Anisotropy Probe and Planck. Amedeo Balbi, C. Baccigalupi, F. Perrotta, S. Matarrese, & N. Vittorio. 588, L5 (2003)
- Cosmological Acceleration through Transition to Constant Scalar Curvature. Leonard Parker, William Komp, & Daniel A. T. Vanzella. 588, 663 (2003)
- The Resolved Fraction of the Cosmic X-Ray Background. A. Mon S. Campana, D. Lazzati, & G. Tagliaferri, 588, 696 (2003)
- Correlation between Galaxies and Quasi-stellar Objects in the Sloan Digital Sky Survey: A Signal from Gravitational Lensing Magnification? Enrique Gaztañaga. 589, 82 (2003)
- Chandra Discovery of the Intracluster Medium around UM 425 at a Redshift of 1.47. Smita Mathur & Rik J. Williams. 589, L1 (2003)
- Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field–North with the Advanced Camera for Surveys. John P. Blakeslee, Zlatan I. Tsvetanov, Adam G. Riess, Holland C. Ford, Garth D. Illingworth, Daniel Magee, John L. Tonry, Narciso Benitez, Mark Clampin, George F. Hartig, Gerhardt R. Meurer, Marco Sirianni, David R. Ardila, Frank Bartko, Rychard Bouwens, Tom Broadhurst, Nicholas Cross, P. D. Feldman, Marijn Franx, David A. Golimowski, Caryl Gronwall, Randy Kimble, John Krist, André R. Martel, Felipe Menanteau, George Miley, Marc Postman, Piero Rosati, William Sparks, L.-G. Strolger, Hien D. Tran, Richard L. White, & Wei Zheng. 589, 693 (2003)
- Emission-Line Galaxies in the STIS Parallel Survey. II. Star Formation Density. Harry I. Teplitz, Nicholas R. Collins, Jonathan P. Gardner, Robert S. Hill, & Jason Rhodes. 589, 704 (2003)
- The Far-Infrared Background Correlation with Cosmic Microwave Background Lensing. Yong-Seon Song, Asantha Cooray, Lloyd Knox, & Matias Zaldarriaga. 590, 664 (2003)
- Non-Gaussianity of the Derived Maps from the First-Year Wilkinson Microwave Anisotropy Probe Data. Lung-Yih Chiang, Pavel D. Naselsky, Oleg V. Verkhodanov, & Michael J. Way. 590, L65 (2003)
- Measuring σ₈ with Cluster Lensing: Biases from Unrelaxed Clusters. Graham P. Smith, Alastair C. Edge, Vincent R. Eke, Robert C. Nichol, Ian Smail, & Jean-Paul Kneib. 590, L79 (2003)

COSMOLOGY: THEORY

- Observational Constraints on Cardassian Expansion. S. Sen & A. A. Sen. 588, 1 (2003)
- Cluster Morphology as a Test of Different Cosmological Models. *Tamon Suwa, Asao Habe, Kohji Yoshikawa, & Takashi Okamoto.* 588, 7 (2003)

- Metal Absorption Lines as Probes of the Intergalactic Medium Prior to the Reionization Epoch. Steven R. Furlanetto & Abraham Loeb. 588, 18 (2003)
- Mass of Clusters in Simulations. Andrea V. Macciò, Giuseppe Murante, & Silvio P. Bonometto. 588, 35 (2003)
- Probing Dark Energy with the Cosmic Microwave Background: Projected Constraints from the Wilkinson Microwave Anisotropy Probe and Planck. Amedeo Balbi, C. Baccigalupi, F. Perrotta, S. Matarrese, & N. Vittorio. 588, L5 (2003)
- Cosmological Acceleration through Transition to Constant Scalar Curvature. Leonard Parker, William Komp, & Daniel A. T. Vanzella. 588, 663 (2003)
- Structure of Dark Matter Halos from Hierarchical Clustering. II. Dependence of Cosmological Models in Cluster-sized Halos. Toshiyuki Fukushige & Junichiro Makino. 588, 674 (2003)
- Dark Halo Cusp: Asymptotic Convergence. Avishai Dekel, Itai Arad, Jonathan Devor, & Yuval Birnboim. 588, 680 (2003)
- Was the Universe Reionized by Massive Metal-free Stars? J. Stuart B. Wyithe & Abraham Loeb. 588, L69 (2003)
- Evolution of the Cosmological Density Distribution Function from the Local Collapse Model. Yasuhiro Ohta, Issha Kayo, & Atsushi Taruya. 589, 1 (2003)
- New Velocity Distribution for Cold Dark Matter in the Context of the Eddington Theory. J. D. Vergados & D. Owen. 589, 17 (2003)
- Cosmological Origin of the Stellar Velocity Dispersions in Massive Early-Type Galaxies. Abraham Loeb & P. J. E. Peebles. 589, 29 (2003)
- The Detectability of the First Stars and Their Cluster Enrichment Signatures. Evan Scannapieco, Raffaella Schneider, & Andrea Ferrara. 589, 35 (2003)
- Observational Strategies of Cosmic Microwave Background Temperature and Polarization Interferometry Experiments. Chan-Gyung Park, Kin-Wang Ng, Changbom Park, Guo-Chin Liu, & Keiichi Umetsu. 589, 67 (2003)
- Formation of the First Stars by Accretion. Kazuyuki Omukai & Francesco Palla. 589, 677 (2003)
- Universal Behavior of Phase Correlations in Nonlinear Gravitational Clustering. Peter Watts, Peter Coles, & Adrian Melott. 589, L61 (2003)
- Inferring the Linear Power Spectrum from the Lyα Forest. Matias Zaldarriaga, Román Scoccimarro, & Lam Hui. 590, 1 (2003)
- Autocorrelation Function of the Soft X-Ray Background Produced by Warm-Hot Gas in Dark Halos. Xiang-Ping Wu & Yan-Jie Xue. 590, 8 (2003)
- Mass-Temperature Relation of Galaxy Clusters: Implication from the Observed Luminosity-Temperature Relation and X-Ray Temperature Function. Mamoru Shimizu, Tetsu Kitayama, Shin Sasaki, & Tasushi Suto. 590, 197 (2003)
- On the Origin of the Global Schmidt Law of Star Formation. Andrey V. Kravtsov. 590, L1 (2003)
- Cluster Formation Rate in Models with Dark Energy. Spyros Basilakos. 590, 636 (2003)
- The Far-Infrared Background Correlation with Cosmic Microwave Background Lensing. Yong-Seon Song, Asantha Cooray, Lloyd Knox, & Matias Zaldarriaga. 590, 664 (2003)
- Low-Frequency Gravitational Waves from Massive Black Hole Binaries: Predictions for LISA and Pulsar Timing Arrays. J. Stuart B. Wyithe & Abraham Loeb. 590, 691 (2003)

DARK MATTER

- Mass of Clusters in Simulations. Andrea V. Macciò, Giuseppe Murante, & Silvio P. Bonometto. 588, 35 (2003)
- Structure of Dark Matter Halos from Hierarchical Clustering. II. Dependence of Cosmological Models in Cluster-sized Halos. Toshiyuki Fukushige & Junichiro Makino. 588, 674 (2003)
- Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)
- Evolution of the Cosmological Density Distribution Function from the Local Collapse Model. Yasuhiro Ohta, Issha Kayo, & Atsushi Taruya. 589, 1 (2003)
- New Velocity Distribution for Cold Dark Matter in the Context of the Eddington Theory. J. D. Vergados & D. Owen. 589, 17 (2003)
- A Search for Stellar Obscuration Events Due to Dark Clouds. A. J. Drake & K. H. Cook. 589, 281 (2003)

Dense Gas Clouds and the Unidentified EGRET Sources. Mark Walker, Masaki Mori, & Michiko Ohishi. 589, 810 (2003)

Nanolensing of Gamma-Ray Bursts. Mark A. Walker & Geraint F. Lewis. 589, 844 (2003)

DENSE MATTER

Nuclear Composition of Gamma-Ray Burst Fireballs. Andrei M. Beloborodov. 588, 931 (2003)

The Crustal Rigidity of a Neutron Star, and Implications for PSR 1828–11 and Other Precession Candidates. Curt Cutler, Greg Ushomirsky, & Bennett Link. 588, 975 (2003)

DIFFUSION

Suppression of Fast Reconnection by Magnetic Shear. Fabian Heitsch & Ellen G. Zweibel. 590, 291 (2003)

Nonlinear Collisionless Perpendicular Diffusion of Charged Particles. W. H. Matthaeus, G. Qin, J. W. Bieber, & G. P. Zank. 590, L53 (2003)

Monte Carlo Study of Supernova Neutrino Spectra Formation. Mathias Th. Keil, Georg G. Raffelt, & Hans-Thomas Janka. 590, 971 (2003)

EARLY UNIVERSE

Chemical Composition of the Early Universe. Martin Harwit & Marco Spaans, 589, 53 (2003)

Formation of the First Stars by Accretion. Kazuyuki Omukai & Francesco Palla. 589, 677 (2003)

Low-Frequency Gravitational Waves from Massive Black Hole Binaries: Predictions for LISA and Pulsar Timing Arrays. J. Stuart B. Wyithe & Abraham Loeb. 590, 691 (2003)

ELEMENTARY PARTICLES

Large Mixing Angle Oscillations as a Probe of the Deep Solar Interior. C. Burgess, N. S. Dzhalilov, M. Maltoni, T. I. Rashba, V. B. Semikoz, M. A. Tórtola, & J. W. F. Valle. 588, L65 (2003)

New Velocity Distribution for Cold Dark Matter in the Context of the Eddington Theory. J. D. Vergados & D. Owen. 589, 17 (2003)

Solar Particle Transport in a Dynamical Quasi-linear Theory. Wolfgang Dröge. 589, 1027 (2003)

EQUATION OF STATE

Probing Dark Energy with the Cosmic Microwave Background: Projected Constraints from the Wilkinson Microwave Anisotropy Probe and Planck. Amedeo Balbi, C. Baccigalupi, F. Perrotta, S. Matarrese, & N. Vittorio. 588, L5 (2003)

Eddington-limited X-Ray Bursts as Distance Indicators. I. Systematic Trends and Spherical Symmetry in Bursts from 4U 1728–34. Duncan K. Galloway, Dimitrios Psaltis, Deepto Chakrabarty, & Michael P. Muno. 590, 999 (2003)

ERRATA, ADDENDA

A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy: Erratum (ApJ, 588, L21 [2003]). Jan T. Kleyna, Mark I. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 589, L59 (2003) (Orig. paper in 588, L21 (2003))

GALAXIES: ABUNDANCES

The Near-Infrared Ca II Triplet-σ Relation for Bulges of Spiral Galaxies. Jesús Falcón-Barroso, Reynier F. Peletier, Alexandre Vazdekis, & Marc Balcells. 588, L17 (2003)

Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)

High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)

Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped Ly α Absorption: Constraints on the Cosmic Neutral Gas-Phase Metallicity at Redshift $z\approx 0.4$. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003)

On Variations in the Peak Luminosity of Type Ia Supernovae. F. X. Timmes, Edward F. Brown, & J. W. Truran. 590, L83 (2003)

Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González. 590, L91 (2003)

GALAXIES: ACTIVE

Cosmic Star Formation History Assocatied with Quasar Activity: An Approach Using the Black Hole-to-Bulge Mass Correlation. Y. P. Wang, T. Yamada, & Y. Taniguchi. 588, 113 (2003)

- What Types of Jets Does Nature Make? A New Population of Radio Quasars. Paolo Padovani, Eric S. Perlman, Hermine Landt, Paolo Giommi, & Matteo Perri. 588, 128 (2003)
- 3.1 Micron H₂O Ice Absorption in LINER-Type Ultraluminous Infrared Galaxies with Cool Far-Infrared Colors: The Centrally Concentrated Nature of Their Deeply Buried Energy Sources. Masatoshi Imanishi & Philip R. Maloney. 588, 165 (2003)

Interferometric Detection of Linear Polarization from Sagittarius A* at 230 GHz. Geoffrey C. Bower, Melvyn C. H. Wright, Heino Falcke, & Donald C. Backer. 588, 331 (2003)

Keck Spectroscopy of Four Quasi-stellar Object Host Galaxies. J. S. Miller & A. I. Sheinis. 588, L9 (2003)

The Speed and Orientation of the Parsec-Scale Jet in 3C 279. B. Glenn Piner, Stephen C. Unwin, Ann E. Wehrle, Alma C. Zook, C. Megan Urry, & Diane M. Gilmore. 588, 716 (2003)

Discovery of a New Radio Galaxy within the Error Box of the Unidentified Gamma-Ray Source 3EG J1735–1500. J. A. Combi, G. E. Romero, J. M. Paredes, D. F. Torres, & M. Ribó. 588, 731 (2003)

A Multiwavelength Study of Narrow-Line Seyfert 1 Galaxies from the Second Byurakan Survey. J. A. Stepanian, E. Benítez, Y. Krongold, I. Cruz-González, J. A. de Diego, V. Chavushyan, R. Mújica, D. Dultzin-Hacyan, & T. Verdugo. 588, 746 (2003)

A Continuous Injection Plasma Model for the X-Ray/Radio Knots in Kiloparsec-Scale Jets of Active Galactic Nuclei. S. Sahayanathan, R. Misra, A. K. Kembhavi, & C. L. Kaul. 588, L77 (2003)

The First CO Map of a Low Surface Brightness Galaxy. K. O'Neil & E. Schinnerer. 588, L81 (2003)

A View through Faraday's Fog: Parsec-Scale Rotation Measures in Active Galactic Nuclei. R. T. Zavala & G. B. Taylor. 589, 126 (2003)

Chandra Discovery of the Intracluster Medium around UM 425 at a Redshift of 1.47. Smita Mathur & Rik J. Williams. 589, L1 (2003)

Relativistic and Slowing Down: The Flow in the Hot Spots of Powerful Radio Galaxies and Quasars. *Markos Georganopoulos & Demosthenes Kazanas*, 589, L5 (2003)

Jet Collimation in Action: Realignment on Kiloparsec Scales in 3C 279. D. C. Homan, M. L. Lister, K. I. Kllermann, M. H. Cohen, E. Ros, J. A. Zensus, M. Kadler, & R. C. Vermeulen. 589, L9 (2003)

The Lack of Broad-Line Regions in Low Accretion Rate Active Galactic Nuclei as Evidence of Their Origin in the Accretion Disk. Fabrizio Nicastro, Andrea Martocchia, & Giorigo Matt. 589, L13 (2003)

BeppoSAX Average Spectra of Seyfert Galaxies. A. Malizia, L. Bassani, J. B. Stephen, G. Di Cocco, F. Fiore, & A. J. Dean. 589, L17 (2003)

Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)

VLBI Polarimetry of 177 Sources from the Caltech–Jodrell Bank Flat-Spectrum Survey. L. K. Pollack, G. B. Taylor, & R. T. Zavala. 589, 733 (2003)

Circumnuclear Dust in Nearby Active and Inactive Galaxies. II. Bars, Nuclear Spirals, and the Fueling of Active Galactic Nuclei. Paul Martini, Michael W. Regan, John S. Mulchaey, & Richard W. Pogge. 589, 774 (2003)

Detection of the "Active" Nucleus of M32. Luis C. Ho, Yuichi Terashima, & James S. Ulvestad. 589, 783 (2003)

An Accretion Model for the Growth of the Central Black Hole Associated with Ionization Instability in Quasars. Y. Lu, K. S. Cheng, & S. N. Zhang. 590, 52 (2003)

Technique for Detecting Warm-Hot Intergalactic Gas in Quasar Ultraviolet Spectra. Luc Binette, Mario Rodríguez-Martínez, Sinhue Haro-Corzo, & Isidro Ballinas. 590, 58 (2003)

The Nature of the Ultraviolet/X-Ray Absorber in PG 2302+029. Bassem M. Sabra, Fred Hamann, Buell T. Jannuzi, Ian M. George, & Joseph C. Shields. 590, 66 (2003)

On the Nature of Low-Luminosity Narrow-Line Active Galactic Nuclei. Ari Laor. 590, 86 (2003)

Testing of Inverse Compton Models for Active Galactic Nuclei with Gamma-Ray and Radio Observations. A. Lähteenmäki & E. Valtaoja. 590, 95 (2003)

The Gamma-Ray Blazar Content of the Northern Sky. David Sowards-Emmerd, Roger W. Romani, & Peter F. Michelson. 590, 109 (2003)

Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)

- The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies. Joanna K. Kuraszkiewicz, Belinda J. Wilkes, Eric J. Hooper, Kim K. McLeod, Kenneth Wood, Jon Bjorkman, Kisha M. Delain, David H. Hughes, Martin S. Elvis, Chris D. Impey, Carol J. Lonsdale, Matt A. Malkan, Jonathan C. McDowell, & Barbara Whitney. 590, 128 (2003)
- The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348.
 A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
- A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy. L. J. Greenhill, R. S. Booth, S. P. Ellingsen, J. R. Herrnstein, D. L. Jauncey, P. M. McCulloch, J. M. Moran, R. P. Norris, J. E. Reynolds, & A. K. Tzioumis. 590, 162 (2003)
- Contrasting the Ultraviolet and X-Ray O vt Column Density Inferred for the Outflow in NGC 5548. Nahum Arav, Jelle Kaastra, Katrien Steenbrugge, Bert Brinkman, Rick Edelson, Kirk T. Korista, & Martijn de Kool. 590, 174 (2003)
- Renewed Activity in the Radio Galaxy PKS B1545-321: Twin Edgebrightened Beams within Diffuse Radio Lobes. *Lakshmi Saripalli, Ravi* Subrahmanyan, & N. Udaya Shankar. 590, 181 (2003)
- Variability of Submillijansky Radio Sources. C. L. Carilli, R. J. Ivison, & D. A. Frail. 590, 192 (2003)
- XMM-Newton Observations of the Perseus Cluster. I. The Temperature and Surface Brightness Structure. E. Churazov, W. Forman, C. Jones, & H. Boehringer. 590, 225 (2003)
- A Hubble Space Telescope/WFPC2 Snapshot Survey of 2MASS-selected Red QSOs. Andrew R. Marble, Dean C. Hines, Gary D. Schmidt, Paul S. Smith, Jason A. Surace, Lee Armus, Roc M. Cutri, & Brant O. Nelson. 590, 707 (2003)
- A Puzzling X-Ray Source Found in the Chandra Deep Field-South. J. Wang, T. Yaqoob, G. Szokoly, R. Gilli, L. Kewley, V. Mainieri, M. Nonino, P. Rosati, P. Tozzi, W. Zheng, A. Zirm, & C. Norman. 590, L87 (2003)

GALAXIES: BL LACERTAE OBJECTS: GENERAL

What Types of Jets Does Nature Make? A New Population of Radio Quasars.

Paolo Padovani, Eric S. Perlman, Hermine Landt, Paolo Giommi, &
Matteo Perri. 588, 128 (2003)

GALAXIES: BL LACERTAE OBJECTS: INDIVIDUAL

Name: BL Lacertae

Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)

Alphanumeric: 3C 66A

Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)

Alphanumeric: OJ 287

Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)

Alphanumeric: ON 231

Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)

Alphanumeric: OQ 530

Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)

Alphanumeric: PKS 0422+004

Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)

Alphanumeric: S5 0716+714

Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)

Alphanumeric: S5 1803+78

Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)

GALAXIES: BULGES

- The Near-Infrared Ca II Triplet–σ Relation for Bulges of Spiral Galaxies.
 Jesús Falcón-Barroso, Reynier F. Peletier, Alexandre Vazdekis, & Marc Balcells. 588, L17 (2003)
- The Relation between Black Hole Mass, Bulge Mass, and Near-Infrared Luminosity. Alessandro Marconi & Leslie K. Hunt. 589, L21 (2003)
- An Accretion Model for the Growth of the Central Black Hole Associated with Ionization Instability in Quasars. Y. Lu, K. S. Cheng, & S. N. Zhang. 590, 52 (2003)

GALAXIES: CLUSTERS: GENERAL

- Cluster Morphology as a Test of Different Cosmological Models. Tamon Suwa, Asao Habe, Kohji Yoshikawa, & Takashi Okamoto. 588, 7 (2003)
- Mass of Clusters in Simulations. Andrea V. Macciò, Giuseppe Murante, & Silvio P. Bonometto. 588, 35 (2003)
- Lowering Infrared Cluster Magnetic Field Strengths: The Radio Galaxy Contributions. Lawrence Rudnick & Katherine M. Blundell. 588, 143 (2003)
- EGRET Upper Limits on the High-Energy Gamma-Ray Emission of Galaxy Clusters. O. Reimer, M. Pohl, P. Sreekumar, & J. R. Mattox. 588, 155 (2003)
- The Amplitude of Mass Fluctuations. Paul Bode & Neta A. Bahcall. 588, L1 (2003)
- Structure of Dark Matter Halos from Hierarchical Clustering. II. Dependence of Cosmological Models in Cluster-sized Halos. Toshiyuki Fukushige & Junichiro Makino. 588, 674 (2003)
- Evolution of the Cosmological Density Distribution Function from the Local Collapse Model. Yasuhiro Ohta, Issha Kayo, & Atsushi Taruya. 589, 1 (2003)
- Correlation between Galaxies and Quasi-stellar Objects in the Sloan Digital Sky Survey: A Signal from Gravitational Lensing Magnification? Enrique Gaztañaga. 589, 82 (2003)
- Chandra Discovery of the Intracluster Medium around UM 425 at a Redshift of 1.47. Smita Mathur & Rik J. Williams. 589, L1 (2003)
- Dynamical Evolution of Galaxies in Clusters. Oleg Y. Gnedin. 589, 752 (2003)
 Observed Non–Steady State Cooling and the Moderate Cluster Cooling Flow Model. Noam Soker & Laurence P. David. 589, 770 (2003)
- Thermal Conduction in Magnetized Turbulent Gas. Jungyeon Cho, A. Lazarian, Albert Honein, Bernard Knaepen, Stavros Kassinos, & Parviz Moin. 589, L77 (2003)
- Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z\sim0.5$. A. Vikhlinin, A. Voevodkin, C. R. Mullis, L. VanSpeybroeck, H. Quintana, B. R. McNamara, I. Gioia, A. Hornstrup, J. P. Henry, W. R. Forman, & C. Jones. 590, 15 (2003)
- Mass-Temperature Relation of Galaxy Clusters: Implication from the Observed Luminosity-Temperature Relation and X-Ray Temperature Function. Mamoru Shimizu, Tetsu Kitayama, Shin Sasaki, & Tasushi Suto. 590, 197 (2003)
- High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)
- Cl 1358+62: Characterizing the Physical Properties of Cluster Galaxies at z = 0.33. Kim-Vy H. Tran, Luc Simard, Garth Illingworth, & Marijn Franx. 590, 238 (2003)
- Spatial and Dynamical Biases in Velocity Statistics of Galaxies. Kohji Yoshikawa, Y. P. Jing, & Gerhard Börner. 590, 654 (2003)
- Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González. 590, L91 (2003)

GALAXIES: CLUSTERS: INDIVIDUAL

NGC Number: NGC 1866

The Distance to the Large Magellanic Cloud Cluster NGC 1866 and the Surrounding Field. M. Salaris, S. Percival, E. Brocato, G. Raimondo, & A. R. Walker. 588, 801 (2003)

Name: Perseus

XMM-Newton Observations of the Perseus Cluster. I. The Temperature and Surface Brightness Structure. E. Churazov, W. Forman, C. Jones, & H. Boehringer. 590, 225 (2003)

Alphanumeric: A851

ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at z ~ 1.5. Masanori Iye, Kazuhiro Shimasaku, Satoshi Miyazaki, Chris Simpson, Masatoshi Imanishi, Nabunari Kashikawa, Takayuki Kodama, Masashi Chiba, Yoshihiko Saito, Miwa Goto, Fumihide Iwamuro, Naoto Kobayashi, Sadanori Okamura, & Hiroshi Terada. 590, 770 (2003)

Alphanumeric: AC 118

Age, Metallicity, and Star Formation History of Cluster Galaxies at z ~ 0.3. P. Merluzzi, F. La Barbera, M. Massarotti, G. Busarello, & M. Capaccioli. 589, 147 (2003)

GALAXIES: COOLING FLOWS

Observed Non–Steady State Cooling and the Moderate Cluster Cooling Flow Model. Noam Soker & Laurence P. David. 589, 770 (2003)

High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)

XMM-Newton Observations of the Perseus Cluster. I. The Temperature and Surface Brightness Structure. E. Churazov, W. Forman, C. Jones, & H. Boehringer. 590, 225 (2003)

Rapid Cooling of Dusty Gas in Elliptical Galaxies. William G. Mathews & Fabrizio Brighenti. 590, L5 (2003)

GALAXIES: DISTANCES AND REDSHIFTS

Photometric Redshift Using the Far-Infrared Spectral Energy Distribution. T. Wiklind. 588, 736 (2003)

The Distance to the Large Magellanic Cloud Cluster NGC 1866 and the Surrounding Field. M. Salaris, S. Percival, E. Brocato, G. Raimondo, & A. R. Walker. 588, 801 (2003)

The Cepheid Distance to NGC 5236 (M83) with the ESO Very Large Telescope. Frank Thim, G. A. Tammann, A. Saha, A. Dolphin, Allan Sandage, E. Tolstoy, & Lukas Labhardt. 590, 256 (2003)

GALAXIES: DWARF

New Light on the Stellar Populations in I Zw 18: Deep Near-Infrared Imaging. Leslie K. Hunt, Trinh X. Thuan, & Yuri I. Izotov. 588, 281 (2003)

A Search for Ionized Gas in the Draco and Ursa Minor Dwarf Spheroidal Galaxies. J. S. Gallagher, G. J. Madsen, R. J. Reynolds, E. K. Grebel, & T. A. Smecker-Hane. 588, 326 (2003)

RR Lyrae and Short-Period Variable Stars in the Dwarf Irregular Galaxy NGC 6822. Gisella Clementini, Enrico V. Held, Lara Baldacci, & Luca Rizzi. 588, L85 (2003)

Draco: A Failure of the Tidal Model. Ralf S. Klessen, Eva K. Grebel, & Daniel Harbeck. 589, 798 (2003)

Clues to the Evolution of the Carina Dwarf Spheroidal Galaxy from the Color Distribution of Its Red Giant Stars. Luca Rizzi, Enrico V. Held, Gianpaolo Bertelli, & Ivo Saviane. 589, L85 (2003)

Supernova Enrichment of Dwarf Spheroidal Galaxies. P. Chris Fragile, Stephen D. Murray, Peter Anninos, & Douglas N. C. Lin. 590, 778 (2003)

GALAXIES: ELLIPTICAL AND LENTICULAR, CD

Cosmic Star Formation History Assocatied with Quasar Activity: An Approach Using the Black Hole-to-Bulge Mass Correlation. Y. P. Wang, T. Yamada, & Y. Taniguchi. 588, 113 (2003)

Rapid Cooling of Dusty Gas in Elliptical Galaxies. William G. Mathews & Fabrizio Brighenti. 590, L5 (2003)

Simulations of Galaxy Formation in a ACDM Universe. III. The Dissipative Formation of an Elliptical Galaxy. Andrés Meza, Julio F. Navarro, Matthias Steinmetz, & Vincent R. Eke. 590, 619 (2003)

ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at $z\sim 1.5$. Masanori Iye, Kazuhiro Shimasaku, Satoshi Miyazaki, Chris Simpson, Masatoshi Imanishi, Nabunari Kashikawa, Takayuki Kodama, Masashi Chiba, Yoshihiko Saito, Miwa Goto, Fumihide Iwamuro, Naoto Kobayashi, Sadanori Okamura, & Hiroshi Terada. 590, 770 (2003)

GALAXIES: EVOLUTION

Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{\rm phot} < 4$ in the Hubble Deep Field–South. E. Daddi, H. J. A. Röttgering, I. Labbé, G. Rudnick, M. Franx, A. F. M. Moorwood, H. W. Rix, P. P. van der Werf, & P. G. van Dokkum. 588, 50 (2003)

Rest-Frame Ultraviolet Spectra of z ~ 3 Lyman Break Galaxies. Alice E. Shapley, Charles C. Steidel, Max Pettini, & Kurt L. Adelberger. 588, 65 (2003)

Cosmic Star Formation History Assocatied with Quasar Activity: An Approach Using the Black Hole-to-Bulge Mass Correlation. Y. P. Wang, T. Yamada, & Y. Taniguchi. 588, 113 (2003)

The Bivariate Luminosity-Color Distribution of IRAS Galaxies and Implications for the High-Redshift Universe. S. C. Chapman, G. Helou, G. F. Lewis, & D. A. Dale. 588, 186 (2003)

A New Approach to Galaxy Morphology. I. Analysis of the Sloan Digital Sky Survey Early Data Release. Roberto G. Abraham, Sidney van den Bergh, & Preethi Nair. 588, 218 (2003)

Further Discoveries of ¹²CO in Low Surface Brightness Galaxies. K. O'Neil, E. Schinnerer, & P. Hofner. 588, 230 (2003)

The First CO Map of a Low Surface Brightness Galaxy. K. O'Neil & E. Schinnerer. 588, L81 (2003)

High-Resolution STIS/Hubble Space Telescope and HIRES/Keck Spectra of Three Weak Mg II Absorbers toward PG 1643+706. Jane C. Charlton, Jie Ding, Stephanie G. Zonak, Christopher W. Churchill, Nicholas A. Bond, & Jane R. Rigby. 589, 111 (2003)

Age, Metallicity, and Star Formation History of Cluster Galaxies at $z\sim0.3$. P. Merluzzi, F. La Barbera, M. Massarotti, G. Busarello, & M. Capaccioli.

589, 147 (2003)

Emission-Line Galaxies in the STIS Parallel Survey. II. Star Formation Density. Harry I. Teplitz, Nicholas R. Collins, Jonathan P. Gardner, Robert S. Hill, & Jason Rhodes. 589, 704 (2003)

The Absorption and Emission Kinematics in the z = 0.7450 Mg II Absorber toward Q1331+17. Sara L. Ellison, Gabriela Mallén-Ornelas, & Marcin Sawicki. 589, 709 (2003)

Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)

Dynamical Evolution of Galaxies in Clusters. Oleg Y. Gnedin. 589, 752 (2003)Draco: A Failure of the Tidal Model. Ralf S. Klessen, Eva K. Grebel, & Daniel Harbeck. 589, 798 (2003)

Clues to the Evolution of the Carina Dwarf Spheroidal Galaxy from the Color Distribution of Its Red Giant Stars. Luca Rizzi, Enrico V. Held, Gianpaolo Bertelli, & Ivo Saviane. 589, L85 (2003)

Cl 1358+62: Characterizing the Physical Properties of Cluster Galaxies at z = 0.33. Kim-Vy H. Tran, Luc Simard, Garth Illingworth, & Marijn Franx. 590, 238 (2003)

Detection of Nonrandom Galaxy Orientations in X-Ray Subclusters of the Coma Cluster. Manfred Kitzbichler & W. Saurer. 590, L9 (2003)

Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822. Yutaka Komiyama, Sadanori Okamura, Masafiuni Yagi, Hisanori Furusawa, Mamoru Doi, Masaru Hamabe, Katsumi Imi, Masahiko Kimura, Satoshi Miyazaki, Fumiaki Nakata, Norio Okada, Masami Ouchi, Maki Sekiguchi, Kazuhiro Shimasaku, Naoki Yasuda, Nobuo Arimoto, & Chisato Ikuta. 590, L17 (2003)

Simulations of Galaxy Formation in a ACDM Universe. III. The Dissipative Formation of an Elliptical Galaxy. Andrés Meza, Julio F. Navarro, Matthias Steinmetz, & Vincent R. Eke. 590, 619 (2003)

Galaxy Formation in Triaxial Halos: Black Hole-Bulge-Dark Halo Correlation. Amr A. El-Zant, Isaac Shlosman, Mitchell C. Begelman, & Juhan Frank. 590, 641 (2003)

Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped Lyα Absorption: Constraints on the Cosmic Neutral Gas-Phase Metallicity at Redshift z ≈ 0.4. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003)

The Multiphase Absorption Systems toward PG 1206+459. Jie Ding, Jane C. Charlton, Christopher W. Churchill, & Christopher Palma. 590, 746 (2003)

ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at z ~ 1.5. Masanori Iye, Kazuhiro Shimasaku, Satoshi Miyazaki, Chris Simpson, Masatoshi Imanishi, Nabunari Kashikawa, Takayuki Kodama, Masashi Chiba, Yoshihiko Saito, Miwa Goto, Fumihide Iwamuro, Naoto Kobayashi, Sadanori Okamura, & Hiroshi Terada. 590, 770 (2003)

Supernova Enrichment of Dwarf Spheroidal Galaxies. P. Chris Fragile, Stephen D. Murray, Peter Anninos, & Douglas N. C. Lin. 590, 778 (2003)

On Variations in the Peak Luminosity of Type Ia Supernovae. F. X. Timmes, Edward F. Brown, & J. W. Truran. 590, L83 (2003)

Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González. 590, L91 (2003)

GALAXIES: FORMATION

Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{\text{phot}} < 4$ in the Hubble Deep Field–South. E. Daddi, H. J. A. Röttgering, I. Labbé, G. Rudnick, M. Franx, A. F. M. Moorwood, H. W. Rix, P. P. van der Werf, & P. G. van Dokkum. 588, 50 (2003)

The Bivariate Luminosity-Color Distribution of IRAS Galaxies and Implications for the High-Redshift Universe. S. C. Chapman, G. Helou, G. F. Lewis, & D. A. Dale. 588, 186 (2003)

Cosmological Origin of the Stellar Velocity Dispersions in Massive Early-Type Galaxies. Abraham Loeb & P. J. E. Peebles. 589, 29 (2003)

The Detectability of the First Stars and Their Cluster Enrichment Signatures.

Evan Scannapieco, Raffaella Schneider, & Andrea Ferrara. 589, 35 (2003)

- Formation of the First Stars by Accretion. Kazuyuki Omukai & Francesco Palla. 589, 677 (2003)
- Substructure in the Andromeda Galaxy Globular Cluster System. K. M. Perrett, D. A. Stiff, D. A. Hanes, & T. J. Bridges. 589, 790 (2003)
- On the Origin of the Global Schmidt Law of Star Formation. Andrey V. Kravtsov. 590, L1 (2003)
- Simulations of Galaxy Formation in a ACDM Universe. III. The Dissipative Formation of an Elliptical Galaxy. Andrés Meza, Julio F. Navarro, Matthias Steinmetz, & Vincent R. Eke. 590, 619 (2003)
- The Far-Infrared Background Correlation with Cosmic Microwave Background Lensing. Yong-Seon Song, Asantha Cooray, Lloyd Knox, & Matias Zaldarriaga. 590, 664 (2003)
- Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González. 590, L91 (2003)

GALAXIES: FUNDAMENTAL PARAMETERS

- A New Approach to Galaxy Morphology. I. Analysis of the Sloan Digital Sky Survey Early Data Release. Roberto G. Abraham, Sidney van den Bergh, & Preethi Nair. 588, 218 (2003)
- The Near-Infrared Ca II Triplet-σ Relation for Bulges of Spiral Galaxies. Jesús Falcón-Barroso, Reynier F. Peletier, Alexandre Vazdekis, & Marc Balcells. 588, L17 (2003)
- Age, Metallicity, and Star Formation History of Cluster Galaxies at z ~ 0.3. P. Merluzzi, F. La Barbera, M. Massarotti, G. Busarello, & M. Capaccioli. 589, 147 (2003)
- The Relation between Black Hole Mass, Bulge Mass, and Near-Infrared Luminosity. Alessandro Marconi & Leslie K. Hunt. 589, L21 (2003)
- Emission-Line Galaxies in the STIS Parallel Survey. II. Star Formation Density. Harry I. Teplitz, Nicholas R. Collins, Jonathan P. Gardner, Robert S. Hill, & Jason Rhodes. 589, 704 (2003)
- Cl 1358+62: Characterizing the Physical Properties of Cluster Galaxies at z = 0.33. Kim-Vy H. Tran, Luc Simard, Garth Illingworth, & Marijn Franx. 590, 238 (2003)

GALAXIES: GENERAL

Some Constraints on the Effects of Age and Metallicity on the Low-Mass X-Ray Binary Formation Rate. Arunav Kundu, Thomas J. Maccarone, Stephen E. Zepf, & Thomas H. Puzia. 589, L81 (2003)

GALAXIES: HALOS

- Diffuse X-Ray Emission from M101. K. D. Kuntz, S. L. Snowden, W. D. Pence, & K. Mukai. 588, 264 (2003)
- Dark Halo Cusp: Asymptotic Convergence. Avishai Dekel, Itai Arad, Jonathan Devor, & Yuval Birnboim. 588, 680 (2003)
- Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)
- High-Resolution STIS/Hubble Space Telescope and HIRES/Keck Spectra of Three Weak Mg II. Absorbers toward PG 1643+706. Jane C. Charlton, Jie Ding, Stephanie G. Zonak, Christopher W. Churchill, Nicholas A. Bond, & Jane R. Rigby. 589, 111 (2003)
- The Absorption and Emission Kinematics in the z=0.7450 Mg II Absorber toward Q1331+17. Sara L. Ellison, Gabriela Mallén-Ornelas, & Marcin Sawicki. 589, 709 (2003)
- Dense Gas Clouds and the Unidentified EGRET Sources. Mark Walker, Masaki Mori, & Michiko Qhishi. 589, 810 (2003)
- Gravitational Lensing by Burkert Halos. Yousin Park & Henry C. Ferguson. 589, L65 (2003)
- The Multiphase Absorption Systems toward PG 1206+459. Jie Ding, Jane C. Charlton, Christopher W. Churchill, & Christopher Palma. 590, 746 (2003)
- On the Spatial Correlations of Lyman Break Galaxies. Evan Scannapieco & Robert J. Thacker. 590, L69 (2003)

GALAXIES: HIGH-REDSHIFT

- Metal Absorption Lines as Probes of the Intergalactic Medium Prior to the Reionization Epoch. Steven R. Furlanetto & Abraham Loeb. 588, 18 (2003)
- Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{phot} < 4$ in the Hubble Deep Field–South. E. Daddi, H. J. A. Röttgering, I. Labbé, G. Rudnick, M. Franx, A. F. M. Moorwood, H. W. Rix, P. P. van der Werf, & P. G. van Dokkum. 588, 50 (2003)

- Rest-Frame Ultraviolet Spectra of z ~ 3 Lyman Break Galaxies. Alice E. Shapley, Charles C. Steidel, Max Pettini, & Kurt L. Adelberger. 588, 65 (2003)
- Photometric Redshift Using the Far-Infrared Spectral Energy Distribution. T. Wiklind. 588, 736 (2003)
- Cosmological Origin of the Stellar Velocity Dispersions in Massive Early-Type Galaxies. Abraham Loeb & P. J. E. Peebles. 589, 29 (2003)
- Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field-North with the Advanced Camera for Surveys. John P. Blakeslee, Zlatan I. Tsvetanov, Adam G. Riess, Holland C. Ford, Garth D. Illingworth, Daniel Magee, John L. Tonry, Narciso Benítez, Mark Clampin, George F. Hartig, Gerhardt R. Meurer, Marco Sirianni, David R. Ardila, Frank Bartko, Rychard Bouwens, Tom Broadhurst, Nicholas Cross, P. D. Feldman, Marijn Franx, David A. Golimowski, Caryl Gronwall, Randy Kimble, John Krist, André R. Martel, Felipe Menanteau, George Miley, Marc Postman, Piero Rosati, William Sparks, L.-G. Strolger, Hien D. Tran, Richard L. White, & Wei Zheng. 589, 693 (2003)
- Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jäger, M. Vestergaard, & S. J. Wagner, 589, 722 (2003)
- ERO R1 in the Field of Cl 0939+4713: Evidence for an S0-Like Galaxy at z ~ 1.5. Masanori Iye, Kazuhiro Shimasaku, Satoshi Miyazaki, Chris Simpson, Masatoshi Imanishi, Nabunari Kashikawa, Takayuki Kodama, Masashi Chiba, Yoshihiko Saito, Miwa Goto, Fumihide Iwamuro, Naoto Kobayashi, Sadanori Okamura, & Hiroshi Terada. 590, 770 (2003)
- On the Spatial Correlations of Lyman Break Galaxies. Evan Scannapieco & Robert J. Thacker. 590, L69 (2003)

GALAXIES: INDIVIDUAL

Messier Number: M31

- Disk-Bulge-Halo Models for the Andromeda Galaxy. Lawrence M. Widrow, Kathryn M. Perrett, & Sherry H. Suyu. 588, 311 (2003)
- Substructure in the Andromeda Galaxy Globular Cluster System. K. M. Perrett, D. A. Stiff, D. A. Hanes, & T. J. Bridges. 589, 790 (2003)
- Discovery of Radio/X-Ray/Optical Resolved Supernova Remnants in the Center of the Andromeda Galaxy. Albert Kong, L. O. Sjouwerman, B. F. Williams, M. R. Garcia, & J. R. Dickel. 590, L21 (2003)

Messier Number: M32

Detection of the "Active" Nucleus of M32. Luis C. Ho, Yuichi Terashima, & James S. Ulvestad. 589, 783 (2003)

Messier Number: M83

The Cepheid Distance to NGC 5236 (M83) with the ESO Very Large Telescope. Frank Thim, G. A. Tammann, A. Saha, A. Dolphin, Allan Sandage, E. Tolstoy, & Lukas Labhardt. 590, 256 (2003)

Messier Number: M101

Diffuse X-Ray Emission from M101. K. D. Kuntz, S. L. Snowden, W. D. Pence, & K. Mukai, 588, 264 (2003)

NGC Number: NGC 300

A Luminous Recurrent Supersoft X-Ray Source in NGC 300. Albert Kong & R. DiStefano. 590, L13 (2003)

NGC Number: NGC 1275

XMM-Newton Observations of the Perseus Cluster. I. The Temperature and Surface Brightness Structure. E. Churazov, W. Forman, C. Jones, & H. Boehringer. 590, 225 (2003)

NGC Number: NGC 3115

Some Constraints on the Effects of Age and Metallicity on the Low-Mass X-Ray Binary Formation Rate. Arunav Kundu, Thomas J. Maccarone, Stephen E. Zepf, & Thomas H. Puzia. 589, L81 (2003)

NGC Number: NGC 4038

A Multitransition CO Study of the Antennae Galaxies NGC 4038/9. Ming Zhu, E. R. Seaquist, & Nario Kuno. 588, 243 (2003)

NGC Number: NGC 4039

A Multitransition CO Study of the Antennae Galaxies NGC 4038/9. Ming Zhu, E. R. Seaquist, & Nario Kuno. 588, 243 (2003)

NGC Number: NGC 4365

Some Constraints on the Effects of Age and Metallicity on the Low-Mass X-Ray Binary Formation Rate. Arunav Kundu, Thomas J. Maccarone, Stephen E. Zepf, & Thomas H. Puzia. 589, L81 (2003)

NGC Number: NGC 4395

A Low-Mass Central Black Hole in the Bulgeless Seyfert 1 Galaxy NGC 4395.
Alexei V. Filippenko & Luis C. Ho. 588, L13 (2003)

NGC Number: NGC 4945

Simultaneous Chandra and Rossi X-Ray Timing Explorer Observations of the Nearby Bright Seyfert 2 Galaxy NGC 4945. Chris Done, Greg M. Madejski, Piotr T. Zycki, & Lincoln J. Greenhill. 588, 763 (2003)

NGC Number: NGC 5253

The Cepheid Distance to NGC 5236 (M83) with the ESO Very Large Telescope. Frank Thim, G. A. Tammann, A. Saha, A. Dolphin, Allan Sandage, E. Tolstoy, & Lukas Labhardt. 590, 256 (2003)

NGC Number: NGC 5457

Diffuse X-Ray Emission from M101. K. D. Kuntz, S. L. Snowden, W. D. Pence, & K. Mukai. 588, 264 (2003)

NGC Number: NGC 5548

Contrasting the Ultraviolet and X-Ray O vi Column Density Inferred for the Outflow in NGC 5548. Nahum Arav, Jelle Kaastra, Katrien Steenbrugge, Bert Brinkman, Rick Edelson, Kirk T. Korista, & Martijn de Kool. 590, 174 (2003)

NGC Number: NGC 6822

- RR Lyrae and Short-Period Variable Stars in the Dwarf Irregular Galaxy NGC 6822. Gisella Clementini, Enrico V. Held, Lara Baldacci, & Luca Rizzi. 588, L85 (2003)
- Discovery of Latent Star Formation in the Extended H 1 Gas around the Local Group Dwarf Irregular Galaxy NGC 6822. Yutaka Komiyama, Sadanori Okamura, Masafumi Yagi, Hisanori Furusawa, Mamoru Doi, Masaru Hamabe, Katsumi Imi, Masahiko Kimura, Satoshi Miyazaki, Fumiaki Nakata, Norio Okada, Masami Ouchi, Maki Sekiguchi, Kazuhiro Shimasaku, Naoki Yasuda, Nobuo Arimoto, & Chisato Ikuta. 590, L17 (2003)

NGC Number: NGC 6946

Chandra Observation of the X-Ray Source Population of NGC 6946. S. S. Holt, E. M. Schlegel, U. Hwang, & R. Petre. 588, 792 (2003)

NGC Number: NGC 7714/7715

Models of the Morphology, Kinematics, and Star Formation History of the Prototypical Collisional Starburst System NGC 7714/7715=Arp 284. Curtis Struck & Beverly J. Smith. 589, 157 (2003)

Name: Carina

Clues to the Evolution of the Carina Dwarf Spheroidal Galaxy from the Color Distribution of Its Red Giant Stars. Luca Rizzi, Enrico V. Held, Gianpaolo Bertelli, & Ivo Saviane. 589, L85 (2003)

Name: Circinus

A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy. L. J. Greenhill, R. S. Booth, S. P. Ellingsen, J. R. Herrnstein, D. L. Jauncey, P. M. McCulloch, J. M. Moran, R. P. Norris, J. E. Reynolds, & A. K. Tzioumis. 590, 162 (2003)

Name: Draco

A Search for Ionized Gas in the Draco and Ursa Minor Dwarf Spheroidal Galaxies. J. S. Gallagher, G. J. Madsen, R. J. Reynolds, E. K. Grebel, & T. A. Smecker-Hane. 588, 326 (2003)

Name: Large Magellanic Cloud

The Distance to the Large Magellanic Cloud Cluster NGC 1866 and the Surrounding Field. M. Salaris, S. Percival, E. Brocato, G. Raimondo, & A. R. Walker. 588, 801 (2003)

Name: Markarian 348

The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348.
A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)

Name: Ursa Minor

A Search for Ionized Gas in the Draco and Ursa Minor Dwarf Spheroidal Galaxies. J. S. Gallagher, G. J. Madsen, R. J. Reynolds, E. K. Grebel, & T. A. Smecker-Hane. 588, 326 (2003)

Name: Ursa Minor dwarf spheroidal

A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy. Jan T. Kleyna, Mark I. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 588, L21 (2003)

Alphanumeric: CXOCDFS J033225.3-274219

A Puzzling X-Ray Source Found in the Chandra Deep Field-South. J. Wang, T. Yaqoob, G. Szokoly, R. Gilli, L. Kewley, V. Mainieri, M. Nonino, P. Rosati, P. Tozzi, W. Zheng, A. Zirm, & C. Norman. 590, L87 (2003)

Alphanumeric: IC 1459

The X-Ray-faint Emission of the Supermassive Nuclear Black Hole of IC 1459. G. Fabbiano, M. Elvis, S. Markoff, A. Siemiginowska, S. Pellegrini, A. Zezas, F. Nicastro, G. Trinchieri, & J. McDowell. 588, 175 (2003)

Alphanumeric: IRAS 00188-0856

3.1 Micron H₂O Ice Absorption in LINER-Type Ultraluminous Infrared Galaxies with Cool Far-Infrared Colors: The Centrally Concentrated Nature of Their Deeply Buried Energy Sources. Masatoshi Imanishi & Philip R. Maloney. 588, 165 (2003)

Alphanumeric: IRAS 03250+1606

3.1 Micron H₂O Ice Absorption in LINER-Type Ultraluminous Infrared Galaxies with Cool Far-Infrared Colors: The Centrally Concentrated Nature of Their Deeply Buried Energy Sources. Masatoshi Imanishi & Philip R. Maloney. 588, 165 (2003)

Alphanumeric: IRAS 21329-2346

3.1 Micron H₂O Ice Absorption in LINER-Type Ultraluminous Infrared Galaxies with Cool Far-Infrared Colors: The Centrally Concentrated Nature of Their Deeply Buried Energy Sources. Masatoshi Imanishi & Philip R. Maloney. 588, 165 (2003)

Alphanumeric: IRAS 23234+0946

3.1 Micron H₂O Ice Absorption in LINER-Type Ultraluminous Infrared Galaxies with Cool Far-Infrared Colors: The Centrally Concentrated Nature of Their Deeply Buried Energy Sources. Masatoshi Imanishi & Philip R. Maloney. 588, 165 (2003)

Alphanumeric: IRAS 23327+2913

3.1 Micron H₂O Ice Absorption in LINER-Type Ultraluminous Infrared Galaxies with Cool Far-Infrared Colors: The Centrally Concentrated Nature of Their Deeply Buried Energy Sources. Masatoshi Imanishi & Philip R. Maloney. 588, 165 (2003)

Alphanumeric: PKS 1246-410

Lowering Infrared Cluster Magnetic Field Strengths: The Radio Galaxy Contributions. Lawrence Rudnick & Katherine M. Blundell. 588, 143 (2003)

Alphanumeric: PKS B1545-321

Renewed Activity in the Radio Galaxy PKS B1545-321: Twin Edgebrightened Beams within Diffuse Radio Lobes. *Lakshmi Saripalli, Ravi* Subrahmanyan, & N. Udaya Shankar. 590, 181 (2003)

Alphanumeric: UGC 01922

The First CO Map of a Low Surface Brightness Galaxy. K. O'Neil & E. Schinnerer. 588, L81 (2003)

Alphanumeric: UGC 5101

3.1 Micron H₂O Ice Absorption in LINER-Type Ultraluminous Infrared Galaxies with Cool Far-Infrared Colors: The Centrally Concentrated Nature of Their Deeply Buried Energy Sources. Masatoshi Imanishi & Philip R. Maloney. 588, 165 (2003)

Alphanumeric: I Zw 18

New Light on the Stellar Populations in I Zw 18: Deep Near-Infrared Imaging. Leslie K. Hunt, Trinh X. Thuan, & Yuri I. Izotov. 588, 281 (2003)

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- Models of the Morphology, Kinematics, and Star Formation History of the Prototypical Collisional Starburst System NGC 7714/7715=Arp 284. Curtis Struck & Beverly J. Smith. 589, 157 (2003)
- Dynamical Evolution of Galaxies in Clusters. Oleg Y. Gnedin. 589, 752 (2003)
 Substructure in the Andromeda Galaxy Globular Cluster System. K. M.
 Perrett, D. A. Stiff, D. A. Hanes, & T. J. Bridges. 589, 790 (2003)
- Detection of Nonrandom Galaxy Orientations in X-Ray Subclusters of the Coma Cluster. Manfred Kitzbichler & W. Saurer. 590, L9 (2003)
- Simulations of Galaxy Formation in a ACDM Universe. III. The Dissipative Formation of an Elliptical Galaxy. Andrés Meza, Julio F. Navarro, Matthias Steinmetz, & Vincent R. Eke. 590, 619 (2003)
- A Hubble Space Telescope/WFPC2 Snapshot Survey of 2MASS-selected Red QSOs. Andrew R. Marble, Dean C. Hines, Gary D. Schmidt, Paul S. Smith, Jason A. Surace, Lee Armus, Roc M. Cutri, & Brant O. Nelson. 590, 707 (2003)

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- Chandra Survey of Radio-quiet, High-Redshift Quasars. Jill Bechtold, Aneta Siemiginowska, Joseph Shields, Bozena Czerny, Agnieszka Janiuk, Fred Hamann, Thomas L. Aldcroft, Martin Elvis, & Adam Dobrzycki. 588, 119 (2003)
- Was the Universe Reionized by Massive Metal-free Stars? J. Stuart B. Wyithe & Abraham Loeb. 588, L69 (2003)
- Chandra Discovery of the Intracluster Medium around UM 425 at a Redshift of 1.47. Smita Mathur & Rik J. Williams. 589, L1 (2003)

GALAXIES: IRREGULAR

- RR Lyrae and Short-Period Variable Stars in the Dwarf Irregular Galaxy NGC 6822. Gisella Clementini, Enrico V. Held, Lara Baldacci, & Luca Rizzi. 588, L85 (2003)
- Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822. Yutaka Komiyama, Sadanori Okamura, Masafumi Yagi, Hisanori Furusawa, Mamoru Doi, Masaru Hamabe, Katsumi Imi, Masahiko Kimura, Satoshi Miyazaki, Fumiaki Nakata, Norio Okada, Masami Ouchi, Maki Sekiguchi, Kazuhiro Shimasaku, Naoki Yasuda, Nobuo Arimoto, & Chisato Ikuta. 590, L17 (2003)

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- Malhotra, Charles A. Beichman, & Thomas H. Jarrett. 588, 199 (2003)
 Further Discoveries of ¹²CO in Low Surface Brightness Galaxies. K. O'Neil, E. Schinnerer, & P. Hofner. 588, 230 (2003)
- A Multitransition CO Study of the Antennae Galaxies NGC 4038/9. Ming Zhu, E. R. Seaguist, & Nario Kuno. 588, 243 (2003)
- Diffuse X-Ray Emission from M101. K. D. Kuntz, S. L. Snowden, W. D. Pence, & K. Mukai. 588, 264 (2003)
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- A Search for Ionized Gas in the Draco and Ursa Minor Dwarf Spheroidal Galaxies. J. S. Gallagher, G. J. Madsen, R. J. Reynolds, E. K. Grebel, & T. A. Smecker-Hane. 588, 326 (2003)
- CO Molecular Gas in Infrared-luminous Galaxies. Lihong Yao, E. R. Seaquist, Nario Kuno, & Loretta Dunne, 588, 771 (2003)
- The First CO Map of a Low Surface Brightness Galaxy. K. O'Neil & E. Schinnerer. 588, L81 (2003)
- A View through Faraday's Fog: Parsec-Scale Rotation Measures in Active Galactic Nuclei. R. T. Zavala & G. B. Taylor. 589, 126 (2003)
- Circumnuclear Dust in Nearby Active and Inactive Galaxies. II. Bars, Nuclear Spirals, and the Fueling of Active Galactic Nuclei. Paul Martini, Michael W. Regan, John S. Mulchaey, & Richard W. Pogge. 589, 774
- Galaxy Formation in Triaxial Halos: Black Hole–Bulge–Dark Halo Correlation. Amr A. El-Zant, Isaac Shlosman, Mitchell C. Begelman, & Juhan Frank. 590, 641 (2003)
- The Molecular Disk in the Cloverleaf Quasar. S. Venturini & P. M. Solomon. 590, 740 (2003)
- The Multiphase Absorption Systems toward PG 1206+459. Jie Ding, Jane C. Charlton, Christopher W. Churchill, & Christopher Palma. 590, 746 (2003)
- On the Rapidly Cooling Interior of Supergalactic Winds. S. Silich, G. Tenorio-Tagle, & C. Muñoz-Tuñón. 590, 791 (2003)

GALAXIES: JETS

- The Speed and Orientation of the Parsec-Scale Jet in 3C 279. B. Glenn Piner, Stephen C. Unwin, Ann E. Wehrle, Alma C. Zook, C. Megan Urry, & Diane M. Gilmore. 588, 716 (2003)
- Discovery of a New Radio Galaxy within the Error Box of the Unidentified Gamma-Ray Source 3EG J1735–1500. J. A. Combi, G. E. Romero, J. M. Paredes, D. F. Torres, & M. Ribó. 588, 731 (2003)
- A Continuous Injection Plasma Model for the X-Ray/Radio Knots in Kiloparsec-Scale Jets of Active Galactic Nuclei. S. Sahayanathan, R. Misra, A. K. Kembhavi, & C. L. Kaul. 588, L77 (2003)
- A View through Faraday's Fog: Parsec-Scale Rotation Measures in Active Galactic Nuclei. R. T. Zavala & G. B. Taylor. 589, 126 (2003)

Jet Collimation in Action: Realignment on Kiloparsec Scales in 3C 279. D. C. Homan, M. L. Lister, K. I. Kllermann, M. H. Cohen, E. Ros, J. A. Zensus, M. Kadler, & R. C. Vermeulen. 589, L9 (2003)

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 A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
- Renewed Activity in the Radio Galaxy PKS B1545-321: Twin Edgebrightened Beams within Diffuse Radio Lobes. Lakshmi Saripalli, Ravi Subrahmanyan, & N. Udaya Shankar. 590, 181 (2003)
- Fast Magnetic Reconnection via Jets and Current Micro-Sheets. Paul Watson & I. J. D. Craig. 590, L57 (2003)

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 Alexei V. Filippenko & Luis C. Ho. 588, L13 (2003)
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- Dark Halo Cusp: Asymptotic Convergence. Avishai Dekel, Itai Arad, Jonathan Devor, & Yuval Birnboim. 588, 680 (2003)
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- Jet Collimation in Action: Realignment on Kiloparsec Scales in 3C 279. D. C. Homan, M. L. Lister, K. I. Kllermann, M. H. Cohen, E. Ros, J. A. Zensus, M. Kadler, & R. C. Vermeulen. 589, L9 (2003)
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- Discovery of Latent Star Formation in the Extended H I Gas around the Local Group Dwarf Irregular Galaxy NGC 6822. Yutaka Komiyama, Sadanori Okamura, Masafimi Yagi, Hisanori Furusawa, Mamoru Doi, Masaru Hamabe, Katsumi Imi, Masahiko Kimura, Satoshi Miyazaki, Fumiaki Nakata, Norio Okada, Masami Ouchi, Maki Sekiguchi, Kazuhiro Shimasaku, Naoki Yasuda, Nobuo Arimoto, & Chisato Ikuta. 590, L17 (2003)

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- A Tale of Two Stars: The Extreme O7 laf+ Supergiant AV 83 and the OC7.5 III((f)) Star AV 69. D. John Hillier, T. Lanz, S. R. Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 588, 1039 (2003)

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- The X-Ray-faint Emission of the Supermassive Nuclear Black Hole of IC 1459. G. Fabbiano, M. Elvis, S. Markoff, A. Siemiginowska, S. Pellegrini, A. Zezas, F. Nicastro, G. Trinchieri, & J. McDowell. 588, 175 (2003)
- A Low-Mass Central Black Hole in the Bulgeless Seyfert 1 Galaxy NGC 4395. Alexei V. Filippenko & Luis C. Ho. 588, L13 (2003)
- A View through Faraday's Fog: Parsec-Scale Rotation Measures in Active Galactic Nuclei. R. T. Zavala & G. B. Taylor. 589, 126 (2003)
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- Circumnuclear Dust in Nearby Active and Inactive Galaxies. II. Bars, Nuclear Spirals, and the Fueling of Active Galactic Nuclei. Paul Martini, Michael W. Regan, John S. Mulchaey, & Richard W. Pogge. 589, 774 (2003)
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- An Accretion Model for the Growth of the Central Black Hole Associated with Ionization Instability in Quasars. Y. Lu, K. S. Cheng, & S. N. Zhang. 590, 52 (2003)
- On the Nature of Low-Luminosity Narrow-Line Active Galactic Nuclei. Ari Laor. 590, 86 (2003)
- The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies. Joanna K. Kuraszkiewicz, Belinda J. Wilkes, Eric J. Hooper, Kim K. McLeod, Kenneth Wood, Jon Bjorkman, Kisha M. Delain, David H. Hughes, Martin S. Elvis, Chris D. Impey, Carol J. Lonsdale, Matt A. Malkan, Jonathan C. McDowell, & Barbara Whitney. 590, 128 (2003)
- Contrasting the Ultraviolet and X-Ray O vi Column Density Inferred for the Outflow in NGC 5548. Nahum Arav, Jelle Kaastra, Kairien Steenbrugge, Bert Brinkman, Rick Edelson, Kirk T. Korista, & Martijn de Kool. 590, 174 (2003)
- Sqeezars: Tidally Powered Stars Orbiting a Massive Black Hole. Tal Alexander & Mark Morris. 590, L25 (2003)
- Galaxy Formation in Triaxial Halos: Black Hole-Bulge-Dark Halo Correlation. Amr A. El-Zant, Isaac Shlosman, Mitchell C. Begelman, & Juhan Frank. 590, 641 (2003)

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- Inferring the Linear Power Spectrum from the Lyα Forest. Matias Zaldarriaga, Román Scoccimarro, & Lam Hui. 590, 1 (2003)
- The Nature of the Ultraviolet/X-Ray Absorber in PG 2302+029. Bassem M. Sabra, Fred Hamann, Buell T. Jannuzi, Ian M. George, & Joseph C. Shields. 590, 66 (2003)
- Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped $\text{Ly}\alpha$ Absorption: Constraints on the Cosmic Neutral Gas-Phase

- Metallicity at Redshift $z \approx 0.4$. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003)
- The Multiphase Absorption Systems toward PG 1206+459. Jie Ding, Jane C. Charlton, Christopher W. Churchill, & Christopher Palma. 590, 746 (2003)

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- An Active Galactic Nucleus Sample with High X-Ray-to-Optical Flux Ratio from RASS. II. Optical Emission Line Properties of Seyfert 1 Type Active Galactic Nuclei. D. W. Xu, Stefanie Komossa, J. Y. Wei, Y. Qian, & X. Z. Zheng. 590, 73 (2003)

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- Cosmic Star Formation History Assocatied with Quasar Activity: An Approach Using the Black Hole-to-Bulge Mass Correlation. Y. P. Wang, T. Yamada, & Y. Taniguchi. 588, 113 (2003)
- Chandra Survey of Radio-quiet, High-Redshift Quasars. Jill Bechtold, Aneta Siemiginowska, Joseph Shields, Bozena Czerny, Agnieszka Janiuk, Fred Hamann, Thomas L. Aldcroft, Martin Elvis, & Adam Dobrzycki. 588, 119 (2003)
- What Types of Jets Does Nature Make? A New Population of Radio Quasars. Paolo Padovani, Eric S. Perlman, Hermine Landt, Paolo Giommi, & Matteo Perri. 588, 128 (2003)
- A Multiwavelength Study of Narrow-Line Seyfert I Galaxies from the Second Byurakan Survey. J. A. Stepanian, E. Benûez, Y. Krongold, I. Cruz-González, J. A. de Diego, V. Chavushyan, R. Mújica, D. Dultzin-Hacyan, & T. Verdugo. 588, 746 (2003)
- Relativistic and Slowing Down: The Flow in the Hot Spots of Powerful Radio Galaxies and Quasars. *Markos Georganopoulos & Demosthenes Kazanas*. 589, L5 (2003)
- Quasar Elemental Abundances at High Redshifts. M. Dietrich, F. Hamann, J. C. Shields, A. Constantin, J. Heidt, K. Jüger, M. Vestergaard, & S. J. Wagner. 589, 722 (2003)
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- On the Nature of Low-Luminosity Narrow-Line Active Galactic Nuclei. *Ari Laor.* 590, 86 (2003)
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- Spectral Slope Variability of BL Lacertae Objects in the Optical Band. Fausto Vagnetti, Dario Trevese, & Roberto Nesci. 590, 123 (2003)
- A Hubble Space Telescope/WFPC2 Snapshot Survey of 2MASS-selected Red QSOs. Andrew R. Marble, Dean C. Hines, Gary D. Schmidt, Paul S. Smith, Jason A. Surace, Lee Armus, Roc M. Cutri, & Brant O. Nelson. 590, 707 (2003)

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Name: Cloverleaf

The Molecular Disk in the Cloverleaf Quasar. S. Venturini & P. M. Solomon. 590, 740 (2003)

Alphanumeric: 0957+561

Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg, Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)

Alphanumeric: AO 0235+164

Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped Ly α Absorption: Constraints on the Cosmic Neutral Gas-Phase Metallicity at Redshift $z\approx 0.4$. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003)

Alphanumeric: 3C 279

- The Speed and Orientation of the Parsec-Scale Jet in 3C 279. B. Glenn Piner, Stephen C. Unwin, Ann E. Wehrle, Alma C. Zook, C. Megan Urry, & Diane M. Gilmore. 588, 716 (2003)
- Jet Collimation in Action: Realignment on Kiloparsec Scales in 3C 279. D. C. Homan, M. L. Lister, K. I. Kllermann, M. H. Cohen, E. Ros, J. A. Zensus, M. Kadler, & R. C. Vermeulen. 589, L9 (2003)

Alphanumeric: H1413+1143

The Molecular Disk in the Cloverleaf Quasar. S. Venturini & P. M. Solomon. 590, 740 (2003)

Alphanumeric: PG 2302+029

The Nature of the Ultraviolet/X-Ray Absorber in PG 2302+029. Bassem M. Sabra, Fred Hamann, Buell T. Jannuzi, Ian M. George, & Joseph C. Shields. 590, 66 (2003)

Alphanumeric: PKS 1127-145

Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped Lyα Absorption: Constraints on the Cosmic Neutral Gas-Phase Metallicity at Redshift z ≈ 0.4. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003) Alpahnumeric: PMN J0134–0931

The Quintuple Quasar: Radio and Optical Observations. Joshua N. Winn, Christopher S. Kochanek, Charles R. Keeton, & James E. J. Lovell. 590, 26 (2003)

The Quintuple Quasar: Mass Models and Interpretation. Charles R. Keeton & Joshua N. Winn. 590, 39 (2003)

Alphanumeric: Q1331+17

The Absorption and Emission Kinematics in the z = 0.7450 Mg II Absorber toward Q1331+17. Sara L. Ellison, Gabriela Mallén-Ornelas, & Marcin Sawicki. 589, 709 (2003)

Alphanumeric: Q2237+0305

Chandra Observations of QSO 2237+0305. X. Dai, G. Chartas, E. Agol, M. W. Bautz, & G. P. Garmire. 589, 100 (2003)

Alphanumeric: S4 0248+430

Chandra ACIS-S Observations of Three Quasars with Low-Redshift Damped Lyα Absorption: Constraints on the Cosmic Neutral Gas-Phase Metallicity at Redshift z ≈ 0.4. David A. Turnshek, Sandhya M. Rao, Andrew F. Ptak, Richard E. Griffiths, & Eric M. Monier. 590, 730 (2003)

Alphanumeric: UM 425

Chandra Discovery of the Intracluster Medium around UM 425 at a Redshift of 1.47. Smita Mathur & Rik J. Williams. 589, L1 (2003)

GALAXIES: SEYFERT

A Low-Mass Central Black Hole in the Bulgeless Seyfert 1 Galaxy NGC 4395. Alexei V. Filippenko & Luis C. Ho. 588, L13 (2003)

A Multiwavelength Study of Narrow-Line Seyfert 1 Galaxies from the Second Byurakan Survey. J. A. Stepanian, E. Benítez, Y. Krongold, I. Cruz-González, J. A. de Diego, V. Chavushyan, R. Mújica, D. Dultzin-Hacyan, & T. Verdugo. 588, 746 (2003)

Simultaneous Chandra and Rossi X-Ray Timing Explorer Observations of the Nearby Bright Seyfert 2 Galaxy NGC 4945. Chris Done, Greg M. Madeiski, Piotr T. Zycki, & Lincoln J. Greenhill. 588, 763 (2003)

BeppoSAX Average Spectra of Seyfert Galaxies. A. Malizia, L. Bassani, J. B. Stephen, G. Di Cocco, F. Fiore, & A. J. Dean. 589, L17 (2003)

Circumnuclear Dust in Nearby Active and Inactive Galaxies. II. Bars, Nuclear Spirals, and the Fueling of Active Galactic Nuclei. Paul Martini, Michael W. Regan, John S. Mulchaey, & Richard W. Pogge. 589, 774 (2003)

An Active Galactic Nucleus Sample with High X-Ray-to-Optical Flux Ratio from RASS. II. Optical Emission Line Properties of Seyfert 1 Type Active Galactic Nuclei. D. W. Xu, Stefanie Komossa, J. Y. Wei, Y. Qian, & X. Z. Zheng. 590, 73 (2003)

The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348.
A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)

A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy. L. J. Greenhill, R. S. Booth, S. P. Ellingsen, J. R. Herrnstein, D. L. Jauncey, P. M. McCulloch, J. M. Moran, R. P. Norris, J. E. Reynolds, & A. K. Tzioumis. 590, 162 (2003)

Contrasting the Ultraviolet and X-Ray O vi Column Density Inferred for the Outflow in NGC 5548. Nahum Arav, Jelle Kaastra, Katrien Steenbrugge, Bert Brinkman, Rick Edelson, Kirk T. Korista, & Martijn de Kool. 590, 174 (2003)

GALAXIES: SPIRAL

Further Discoveries of ¹²CO in Low Surface Brightness Galaxies. K. O'Neil, E. Schinnerer, & P. Hofner. 588, 230 (2003)

Disk-Bulge-Halo Models for the Andromeda Galaxy. Lawrence M. Widrow, Kathryn M. Perrett, & Sherry H. Suyu. 588, 311 (2003)

The First CO Map of a Low Surface Brightness Galaxy. K. O'Neil & E. Schinnerer. 588, L81 (2003)

A Turbulent Origin for Flocculent Spiral Structure in Galaxies. Bruce G. Elmegreen, Debra Meloy Elmegreen, & Samuel N. Leitner. 590, 271 (2003)

GALAXIES: STARBURST

- Rest-Frame Ultraviolet Spectra of z ~ 3 Lyman Break Galaxies. Alice E. Shapley, Charles C. Steidel, Max Pettini, & Kurt L. Adelberger. 588, 65 (2003)
- A Submillimeter and Radio Survey of Gamma-Ray Burst Host Galaxies: A Glimpse into the Future of Star Formation Studies. E. Berger, L. L. Cowie, S. R. Kulkarni, D. A. Frail, H. Aussel, & A. J. Barger. 588, 99 (2003)
- 3.1 Micron H₂O Ice Absorption in LINER-Type Ultraluminous Infrared Galaxies with Cool Far-Infrared Colors: The Centrally Concentrated Nature of Their Deeply Buried Energy Sources. Masatoshi Imanishi & Philip R. Maloney. 588, 165 (2003)

A Multitransition CO Study of the Antennae Galaxies NGC 4038/9. Ming Zhu, E. R. Seaquist, & Nario Kuno. 588, 243 (2003)

New Light on the Stellar Populations in I Zw 18: Deep Near-Infrared Imaging. Leslie K. Hunt, Trinh X. Thuan, & Yuri I. Izotov. 588, 281 (2003)

CO Molecular Gas in Infrared-luminous Galaxies. Lihong Yao, E. R. Seaquist, Nario Kuno, & Loretta Dunne. 588, 771 (2003)

Models of the Morphology, Kinematics, and Star Formation History of the Prototypical Collisional Starburst System NGC 7714/7715=Arp 284. Curtis Struck & Beverly J. Smith. 589, 157 (2003)

Variability of Submillijansky Radio Sources. C. L. Carilli, R. J. Ivison, & D. A. Frail. 590, 192 (2003)

On the Rapidly Cooling Interior of Supergalactic Winds. S. Silich, G. Tenorio-Tagle, & C. Muñoz-Tuñón. 590, 791 (2003)

GALAXIES: STAR CLUSTERS

Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)

The Density Profile of Cluster-Scale Dark Matter Halos. Häkon Dahle, Steen Hannestad, & Jesper Sommer-Larsen. 588, L73 (2003)

Substructure in the Andromeda Galaxy Globular Cluster System. K. M. Perrett, D. A. Stiff, D. A. Hanes, & T. J. Bridges. 589, 790 (2003)

Some Constraints on the Effects of Age and Metallicity on the Low-Mass X-Ray Binary Formation Rate. Arunav Kundu, Thomas J. Maccarone, Stephen E. Zepf, & Thomas H. Puzia. 589, L81 (2003)

A Turbulent Origin for Flocculent Spiral Structure in Galaxies. Bruce G. Elmegreen, Debra Meloy Elmegreen, & Samuel N. Leitner. 590, 271 (2003)

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GALAXIES: STELLAR CONTENT

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- The Distance to the Large Magellanic Cloud Cluster NGC 1866 and the Surrounding Field. M. Salaris, S. Percival, E. Brocato, G. Raimondo, & A. R. Walker. 588, 801 (2003)
- Clues to the Evolution of the Carina Dwarf Spheroidal Galaxy from the Color Distribution of Its Red Giant Stars. Luca Rizzi, Enrico V. Held, Gianpaolo Bertelli, & Ivo Saviane. 589, L85 (2003)
- Discovery of Latent Star Formation in the Extended H i Gas around the Local Group Dwarf Irregular Galaxy NGC 6822. Yutaka Komiyama, Sadanori Okamura, Masafiuni Yagi, Hisanori Furusawa, Mamoru Doi, Masaru Hamabe, Katsumi Imi, Masahiko Kimura, Satoshi Miyazaki, Fumiaki Nakata, Norio Okada, Masami Ouchi, Maki Sekiguchi, Kazuhiro Shimasaku, Naoki Yasuda, Nobuo Arimoto, & Chisato Ikuta. 590, L17 (2003)
- Differences in Carbon and Nitrogen Abundances between Field and Cluster Early-Type Galaxies. P. Sánchez-Blázquez, J. Gorgas, N. Cardiel, J. Cenarro, & J. J. González. 590, L91 (2003)

GALAXIES: STRUCTURE

- Disk-Bulge-Halo Models for the Andromeda Galaxy. Lawrence M. Widrow, Kathryn M. Perrett, & Sherry H. Suyu. 588, 311 (2003)
- Draco: A Failure of the Tidal Model. Ralf S. Klessen, Eva K. Grebel, & Daniel Harbeck. 589, 798 (2003)
- Cl 1358+62: Characterizing the Physical Properties of Cluster Galaxies at z = 0.33. Kim-Vy H. Tran, Luc Simard, Garth Illingworth, & Marijn Franx. 590, 238 (2003)
- Galaxy Formation in Triaxial Halos: Black Hole-Bulge-Dark Halo Correlation. Amr A. El-Zant, Isaac Shlosman, Mitchell C. Begelman, & Juhan Frank. 590, 641 (2003)

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Corotation, Stellar Wandering, and Fine Structure of the Galactic Abundance Pattern. J. R. D. Lépine, I. A. Acharova, & Yu. N. Mishurov. 589, 210 (2003)

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Three-dimensional Simulations of the Chemical and Dynamical Evolution of the Galactic Bulge. Naohito Nakasato & Ken'ichi Nomoto. 588, 842 (2003)

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- Interferometric Detection of Linear Polarization from Sagittarius A* at 230 GHz. Geoffrey C. Bower, Melvyn C. H. Wright, Heino Falcke, & Donald C. Backer. 588, 331 (2003)
- A Deep Chandra Catalog of X-Ray Point Sources toward the Galactic Center. M. P. Muno, F. K. Baganoff, M. W. Bautz, W. N. Brandt, P. S. Broos, E. D. Feigelson, G. P. Garmire, M. R. Morris, G. R. Ricker, & L. K. Townsley. 589, 225 (2003)
- The Optical Gravitational Lensing Experiment: Is Interstellar Extinction toward the Galactic Center Anomalous? A. Udalski. 590, 284 (2003)
- Orbital Inspiral into a Massive Black Hole in a Galactic Center. Tal Alexander & Clovis Hopman. 590, L29 (2003)
- Stellar Disk in the Galactic Center: A Remnant of a Dense Accretion Disk? Andrei M. Beloborodov & Yuri Levin. 590, L33 (2003)
- Nonthermal Emission from the Arches Cluster (G0.121+0.017) and the Origin of γ -Ray Emission from 3EG J1746–2851. *F. Yusef-Zadeh, M. Nord, M. Wardle, C. Law, C. Lang, & T. J. W. Lazio.* 590, L103 (2003)

GALAXY: EVOLUTION

- Stellar Sources for Heavy r-Process Nuclei. Y.-Z. Qian & G. J. Wasserburg. 588, 1099 (2003)
- Corotation, Stellar Wandering, and Fine Structure of the Galactic Abundance Pattern. J. R. D. Lépine, I. A. Acharova, & Yu. N. Mishurov. 589, 210 (2003)
- The Superbubble Origin of ²²Ne in Cosmic Rays. *J. C. Higdon & R. E. Lingenfelter.* 590, 822 (2003)

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- Three-dimensional Simulations of the Chemical and Dynamical Evolution of the Galactic Bulge. Naohito Nakasato & Ken'ichi Nomoto. 588, 842 (2003)
- White Dwarf Sequences in Dense Star Clusters. Jarrod R. Hurley & Michael M. Shara. 589, 179 (2003)
- Kinematics of Tidal Debris from ω Centauri's Progenitor Galaxy. Arihiro Mizutani, Masashi Chiba, & Tsuyoshi Sakamoto. 589, L89 (2003)

GALAXY: GENERAL

Surprisingly Little O vi Emission Arises in the Local Bubble. R. L. Shelton. 589, 261 (2003)

GALAXY: GLOBULAR CLUSTERS: GENERAL

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- The Initial Helium Content of Galactic Globular Cluster Stars from the R-Parameter: Comparison with the Cosmic Microwave Background Constraint. Santi Cassisi, Maurizio Salaris, & Alan W. Irwin. 588, 862 (2003)
- White Dwarf Sequences in Dense Star Clusters. Jarrod R. Hurley & Michael M. Shara. 589, 179 (2003)
- Substructure in the Andromeda Galaxy Globular Cluster System. K. M. Perrett, D. A. Stiff, D. A. Hanes, & T. J. Bridges. 589, 790 (2003)
- Some Constraints on the Effects of Age and Metallicity on the Low-Mass X-Ray Binary Formation Rate. Arunav Kundu, Thomas J. Maccarone, Stephen E. Zepf, & Thomas H. Puzia. 589, L81 (2003)

- Some Global Characteristics of the Galactic Globular Cluster System. Sidney van den Bergh. 590, 797 (2003)
- Star Formation History of ω Centauri Imprinted in Elemental Abundance Patterns. Takuji Tsujimoto & Toshikazy Shigeyama. 590, 803 (2003)
- The Abundance Evolution of Oxygen, Sodium, and Magnesium in Extremely Metal-Poor Intermediate-Mass Stars: Implications for the Self-Pollution Scenario in Globular Clusters. Pavel A. Denissenkov & Falk Herwig. 590, 1.99 (2003)

GALAXY: GLOBULAR CLUSTERS: INDIVIDUAL

Messier Number: M3

Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)

Messier Number: M10

Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)

Messier Number: M13

Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)

Messier Number: M31 G1

Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)

Messier Number: M80

Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)

Messier Number: M92

Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)

NGC Number: NGC 104

X-Ray Studies of Two Neutron Stars in 47 Tucanae: Toward Constraints on the Equation of State. C. O. Heinke, J. E. Grindlay, D. A. Lloyd, & P. D. Edmonds. 588, 452 (2003)

NGC Number: NGC 288

Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)

NGC Number: NGC 5139

A Capture Scenario for Globular Cluster ω Centauri. *Toshio Tsuchiya, Dana I. Dinescu, & Vladimir I. Korchagin.* 589, L29 (2003)

NGC Number: NGC 6397

The Complex Hα Line Profile of the Bright Companion to PSR J1740–5340 in NGC 6397. E. Sabbi, R. Gratton, F. R. Ferraro, A. Bragaglia, A. Possenti, N. D'Amico, & F. Camilo. 589, L41 (2003)

Name: ω Centauri

- Kinematics of Tidal Debris from ω Centauri's Progenitor Galaxy. Arihiro Mizutani, Masashi Chiba, & Tsuyoshi Sakamoto. 589, L89 (2003)
- Star Formation History of ω Centauri Imprinted in Elemental Abundance Patterns. Takuji Tsujimoto & Toshikazy Shigeyama. 590, 803 (2003)

Name: Mayall II

Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)

Name: Terzan 5

A Chandra X-Ray Study of the Dense Globular Cluster Terzan 5. C. O. Heinke, P. D. Edmonds, J. E. Grindlay, D. A. Lloyd, H. N. Cohn, & P. M. Lugger. 590, 809 (2003)

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Alphanumeric: G1

A Dynamical Model for the Globular Cluster G1. Holger Baumgardt, Junichiro Makino, Piet Hut, Steve McMillan, & Simon Portegies Zwart. 589, L25 (2003)

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- A Low-Latitude Halo Stream around the Milky Way. Brian Yanny, Heido Jo Newberg, Eva K. Grebel, Steve Kent, Michael Odenkirchen, Connie M. Rockosi, David Schlegel, Mark Subbarao, Jon Brinkmann, Masataka Fukugita, Željko Ivezic, Don Q. Lamb, Donald P. Schneider, & Donald G. York. 588, 824 (2003)
- Surprisingly Little O vI Emission Arises in the Local Bubble. R. L. Shelton. 589, 261 (2003)
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- Star Formation History of ω Centauri Imprinted in Elemental Abundance Patterns. *Takuji Tsujimoto & Toshikazy Shigeyama*. 590, 803 (2003)

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Chandra Observations of the Young Open Cluster NGC 2516. F. Damiani, E. Flaccomio, G. Micela, S. Sciortino, F.R. Harnden, Jr., S.S. Murray, S.J. Wolk, & R.D. Jeffries. 588, 1009 (2003)

Name: Trumpler 14

Chandra Observations of Associates of η Carinae. I. Luminosities. Nancy Remage Evans, Frederick D. Seward, Miriam I. Krauss, Takashi Isobe, Joy Nichols, Eric M. Schlegel, & Scott J. Wolk. 589, 509 (2003)

Name: Trumpler 16

Chandra Observations of Associates of η Carinae. I. Luminosities. Nancy Remage Evans, Frederick D. Seward, Miriam I. Krauss, Takashi Isobe, Joy Nichols, Eric M. Schlegel, & Scott J. Wolk. 589, 509 (2003)

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- A Low-Latitude Halo Stream around the Milky Way. Brian Yanny, Heido Jo Newberg, Eva K. Grebel, Steve Kent, Michael Odenkirchen, Connie M. Rockosi, David Schlegel, Mark Subbarao, Jon Brinkmann, Masataka Fukugita, Željko Ivezic, Don Q. Lamb, Donald P. Schneider, & Donald G. York. 588, 824 (2003)
- Corotation, Stellar Wandering, and Fine Structure of the Galactic Abundance Pattern. J. R. D. Lépine, I. A. Acharova, & Yu. N. Mishurov. 589, 210 (2003)
- The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebey, M. Fich, R. Taylor, Y. Cao, & T. Hancock. 590, 906 (2003)

GAMMA RAYS: BURSTS

- A Submillimeter and Radio Survey of Gamma-Ray Burst Host Galaxies: A Glimpse into the Future of Star Formation Studies. E. Berger, L. L. Cowie, S. R. Kulkarni, D. A. Frail, H. Aussel, & A. J. Barger. 588, 99 (2003)
- GRB 021004: A Massive Progenitor Star Surrounded by Shells. Bradley E. Schaefer, C. L. Gerardy, P. Höflich, A. Panaitescu, R. Quimby, J. Mader, G. J. Hill, P. Kumar, J. C. Wheeler, M. Eracleous, S. Sigurdsson, P. Mészáros, B. Zhang, L. Wang, F. V. Hessman, & V. Petrosian. 588, 387 (2003)
- Nuclear Composition of Gamma-Ray Burst Fireballs. Andrei M. Beloborodov. 588, 931 (2003)

- Comparison of the Gamma-Ray Burst Sensitivity of Different Detectors. David L. Band. 588, 945 (2003)
- Discovery of GRB 020405 and Its Late Red Bump. P. A. Price, S. R. Kulkarni, E. Berger, D. W. Fox, J. S. Bloom, S. G. Djorgovski, D. A. Frail, T. J. Galama, F. A. Harrison, P. McCarthy, D. E. Reichart, R. Sari, S. A. Yost, H. Jerjen, K. Flint, A. Phillips, B. E. Warren, T. S. Axelrod, R. A. Chevalier, J. Holtzman, R. A. Kimble, B. P. Schmidt, J. C. Wheeler, F. Frontera, E. Costa, L. Piro, K. Hurley, T. Cline, C. Guidorzi, E. Montanari, E. Mazets, S. Golenetskii, I. Mitrofanov, D. Anfimov, A. Kozyrev, M. Litvak, A. Sanin, W. Boynton, C. Fellows, K. Harshman, C. Shinohara, A. Gal-Yam, E. Ofek, & Y. Lipkin. 589, 838 (2003)
- Nanolensing of Gamma-Ray Bursts. Mark A. Walker & Geraint F. Lewis. 589, 844 (2003)
- Gravitational Radiation from Gamma-Ray Burst Progenitors. Shiho Kobayashi & Peter Mészáros. 589, 861 (2003)
- Wind-Interaction Models for the Early Afterglows of Gamma-Ray Bursts: The Case of GRB 021004. Zhi-Yun Li & Roger A. Chevalier. 589, L69 (2003)
- Variability of Submillijansky Radio Sources. C. L. Carilli, R. J. Ivison, & D. A. Frail. 590, 192 (2003)
- A Standard Kinetic Energy Reservoir in Gamma-Ray Burst Afterglows. E. Berger, S. R. Kulkarni, & D. A. Frail. 590, 379 (2003)
- The Broadband Afterglow of GRB 980703. D. A. Frail, S. A. Yost, E. Berger, F. A. Harrison, R. Sari, S. R. Kulkarni, G. B. Taylor, J. S. Bloom, D. W. Fox, G. H. Moriarty-Schieven, & P. A. Price. 590, 992 (2003)
- Integral and XMM-Newton Observations of the Weak Gamma-Ray Burst GRB 030227. S. Mereghetti, D. Görz, A. Tiengo, V. Beckmann, J. Borkowski, T.J.-L. Courvoisier, A. von Kienlin, V. Schoenfelder, J. P. Roques, L. Bouchet, P. Ubertini, A. Castro-Tirado, F. Lebrun, J. Paul, N. Lund, J. M. Mas-Hesse, W. Hermsen, P. R. den Hartog, & C. Winkler. 590, L73 (2003)

GAMMA RAYS: OBSERVATIONS

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- Discovery of a New Radio Galaxy within the Error Box of the Unidentified Gamma-Ray Source 3EG J1735–1500. J. A. Combi, G. E. Romero, J. M. Paredes, D. F. Torres, & M. Ribó. 588, 731 (2003)
- Neutrinos from Accreting Neutron Stars. Luis A. Anchordoqui, Diego F. Torres, Thomas P. McCauley, Gustavo E. Romero, & Felix A. Aharonian. 589, 481 (2003)
- Search for a Point-Source Counterpart of the Unidentified Gamma-Ray Source TeV J2032+4130 in Cygnus. R. Mukherjee, J. P. Halpern, E. V. Gotthelf, M. Eracleous, & N. Mirabal. 589, 487 (2003)
- The Reuven Ramaty High Energy Solar Spectroscopic Imager Observation of the 1809 keV Line from Galactic ²⁶Al. D. M. Smith. 589, L55 (2003)
- Dense Gas Clouds and the Unidentified EGRET Sources. Mark Walker, Masaki Mori, & Michiko Ohishi. 589, 810 (2003)
- Testing of Inverse Compton Models for Active Galactic Nuclei with Gamma-Ray and Radio Observations. A. Lähteenmäki & E. Valtaoja. 590, 95 (2003)
- The Gamma-Ray Blazar Content of the Northern Sky. David Sowards-Emmerd, Roger W. Romani, & Peter F. Michelson. 590, 109 (2003)

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- Extended Acceleration in Slot Gaps and Pulsar High-Energy Emission. Alex G. Muslimov & Alice K. Harding. 588, 430 (2003)
- Nuclear Composition of Gamma-Ray Burst Fireballs. Andrei M. Beloborodov. 588, 931 (2003)
- Neutrinos from Accreting Neutron Stars. Luis A. Anchordoqui, Diego F. Torres, Thomas P. McCauley, Gustavo E. Romero, & Felix A. Aharonian. 589, 481 (2003)

GRAVITATION

- Cosmological Acceleration through Transition to Constant Scalar Curvature.

 Leonard Parker, William Komp, & Daniel A. T. Vanzella. 588, 663 (2003)
- Propagation Speed of Gravity and the Relativistic Time Delay. Clifford M. Will. 590, 683 (2003)

GRAVITATIONAL LENSING

- Disk-Bulge-Halo Models for the Andromeda Galaxy. Lawrence M. Widrow, Kathryn M. Perrett, & Sherry H. Suyu. 588, 311 (2003)
- Rapid Brightness Fluctuations in Q0957+561A,B: Microlensing or Seeing? Wesley N. Colley, Irwin I. Shapiro, Jennifer Pegg. Edwin L. Turner, Tomislav Kundić, Karen Loomis, N. C. Hastings, & Russet McMillan. 588, 711 (2003)

- The Density Profile of Cluster-Scale Dark Matter Halos. Häkon Dahle, Steen Hannestad, & Jesper Sommer-Larsen. 588, L73 (2003)
- Correlation between Galaxies and Quasi-stellar Objects in the Sloan Digital Sky Survey: A Signal from Gravitational Lensing Magnification? Enrique Gaztañaga. 589, 82 (2003)
- Chandra Observations of QSO 2237+0305. X. Dai, G. Chartas, E. Agol, M. W. Bautz, & G. P. Garmire. 589, 100 (2003)
- Bringing Closure to Microlensing Mass Measurement. Neal Dalal & Benjamin F. Lane. 589, 199 (2003)
- External Shear in Quadruply Imaged Lens Systems. Gilbert P. Holder & Paul L. Schechter. 589, 688 (2003)
- Nanolensing of Gamma-Ray Bursts. Mark A. Walker & Geraint F. Lewis. 589, 844 (2003)
- Gravitational Lensing by Burkert Halos. Yousin Park & Henry C. Ferguson. 589, L65 (2003)
- The Quintuple Quasar: Radio and Optical Observations. Joshua N. Winn, Christopher S. Kochanek, Charles R. Keeton, & James E. J. Lovell. 590, 26 (2003)
- The Quintuple Quasar: Mass Models and Interpretation. Charles R. Keeton & Joshua N. Winn. 590, 39 (2003)
- The Optical Gravitational Lensing Experiment: Is Interstellar Extinction toward the Galactic Center Anomalous? A. Udalski. 590, 284 (2003)
- X-Ray Pulses from Accretion Columns: Contributions to the Energy Dependence of the Pulse Shape. U. Kraus, C. Zahn, C. Weth, & H. Ruder. 590, 424 (2003)
- The Far-Infrared Background Correlation with Cosmic Microwave Background Lensing. Yong-Seon Song, Asantha Cooray, Lloyd Knox, & Matias Zaldarriaga. 590, 664 (2003)
- Semilinear Gravitational Lens Inversion. S. J. Warren & S. Dye. 590, 673 (2003)
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- Measuring σ₈ with Cluster Lensing: Biases from Unrelaxed Clusters. Graham P. Smith, Alastair C. Edge, Vincent R. Eke, Robert C. Nichol, Ian Smail, & Jean-Paul Kneib. 590, L79 (2003)

GRAVITATIONAL WAVES

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HYDRODYNAMICS

- Inner Boundary Conditions for Advection-dominated Accretion onto Black Holes. Peter A. Becker & Truong Le. 588, 408 (2003)
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- Role of Shocked Accretion Flows in Regulating the Quasi-Periodic Oscillation of Galactic Black Hole Candidates. *Tapas K. Das.* 588, L89 (2003)
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- On the Early Evolution of Forming Jovian Planets. II. Analysis of Accretion and Gravitational Torques. Andrew F. Nelson & Willy Benz. 589, 578 (2003)
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INFRARED: GALAXIES

- Detection of Strong Clustering of Red K-selected Galaxies at $2 < z_{phot} < 4$ in the Hubble Deep Field–South. E. Daddi, H. J. A. Röttgering, I. Labbé, G. Rudnick, M. Franx, A. F. M. Moorwood, H. W. Rix, P. P. van der Werf, & P. G. van Dokkum. 588, 50 (2003)
- 3.1 Micron H₂O Ice Absorption in LINER-Type Ultraluminous Infrared Galaxies with Cool Far-Infrared Colors: The Centrally Concentrated Nature of Their Deeply Buried Energy Sources. Masatoshi Imanishi & Philip R. Maloney. 588, 165 (2003)
- The Bivariate Luminosity-Color Distribution of IRAS Galaxies and Implications for the High-Redshift Universe. S. C. Chapman, G. Helou, G. F. Lewis, & D. A. Dale. 588, 186 (2003)
- Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features. Nanyao Lu, George Helou, Michael W. Werner, Harriet L. Dinerstein, Daniel A. Dale, Nancy A. Silbermann, Sangeeta Malhotra, Charles A. Beichman, & Thomas H. Jarrett. 588, 199 (2003)
- The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies. Joanna K. Kuraszkiewicz, Belinda J. Wilkes, Eric J. Hooper, Kim K. McLeod, Kenneth Wood, Jon Bjorkman, Kisha M. Delain, David H. Hughes, Martin S. Elvis, Chris D. Impey, Carol J. Lonsdale, Matt A. Malkan, Jonathan C. McDowell, & Barbara Whitney. 590, 128 (2003)

INFRARED: GENERAL

The Far-Infrared Background Correlation with Cosmic Microwave Background Lensing. Yong-Seon Song, Asantha Cooray, Lloyd Knox, & Matias Zaldarriaga. 590, 664 (2003)

INFRARED: ISM

- Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features. Nanyao Lu, George Helou, Michael W. Werner, Harriet L. Dinerstein, Daniel A. Dale, Nancy A. Silbermann, Sangeeta Malhotra, Charles A. Beichman, & Thomas H. Jarrett. 588, 199 (2003)
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- Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study. Kathleen E. Kraemer, James M. Jackson, Marc Kassis, Lynne K. Deutsch, Joseph L. Hora, Robert Simon, William F. Hoffmann, G. G. Fazio, Aditya Dayal, T. M. Bania, Dan P. Clemens, & Mark H. Heyer. 588, 918 (2003)
- Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae. Miwa Goto, W. Gaessler, Yutaka Hayano, Masanori Iye, Yukiko Kamata, Tomio Kanzawa, Naoto Kobayashi, Yosuke Minowa, D. J. Saint-Jacques, Hideki Takami, Naruhisa Takato, & Hiroshi Terada. 589, 419 (2003)
- The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebey, M. Fich, R. Taylor, Y. Cao, & T. Hancock. 590, 906 (2003)

INFRARED: SOLAR SYSTEM

Saturated Hydrocarbons in Comet 153P/lkeya-Zhang: Ethane, Methane, and Monodeuterio-Methane. *Hideyo Kawakita, Jun-ichi Watanabe, Daisuke Kinoshita, Masateru Ishiguro, & Ryosuke Nakamura.* 590, 573 (2003)

INFRARED: STARS

- Near-Infrared Interferometric Measurements of Herbig Ae/Be Stars. J. A. Eisner, B. F. Lane, R. L. Akeson, L. A. Hillenbrand, & A. I. Sargent. 588, 360 (2003)
- Interferometry on Mira in the Mid-Infrared; Cyclic Variability of the Continuum Diameter and the Effect of Spectral Lines on Apparent Size. J. Weiner, D. D. S. Hale, & C. H. Townes. 588, 1064 (2003)
- Asymptotic Giant Branch and Supergiant Stellar Diameters in the Mid-Infrared. J. Weiner, D. D. S. Hale, & C. H. Townes. 589, 976 (2003)
- The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849—400910. G. L. Israel, S. Covino, R. Perna, R. Mignani, L. Stella, S. Campana, G. Marconi, G. Bono, S. Mereghetti, C. Motch, I. Negueruela, T. Oosterbroek, & L. Angelini. 589, L93 (2003)
- New Low-Mass Members of the Taurus Star-forming Region. K. L. Luhman, Cesar Briceno, John R. Stauffer, Lee Hartmann, D. Barrado y Navascues, & Nelson Caldwell. 590, 348 (2003)

Modeling the Infrared Emission from the HR 4796A Disk. Aigen Li & J. I. Lunine. 590, 368 (2003)

INSTABILITIES

- On the Small-Scale Stability of Thermonuclear Flames in Type Ia Supernovae. F. K. Roepke, J. C. Niemeyer, & W. Hillenbrandt. 588, 952 (2003)
- The Effect of Cosmic-Ray Diffusion on the Parker Instability. Dongsu Ryu, Jongsoo Kim, Seung Soo Hong, & T. W. Jones. 589, 338 (2003)
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- Gap Formation by Planets in Turbulent Protostellar Disks. Wayne F. Winters, Steven A. Balbus, & John F. Hawley. 589, 543 (2003)
- The Thermal Regulation of Gravitational Instabilities in Protoplanetary Disks.

 Brian K. Pickett, Annie C. Mejía, Richard H. Durisen, Patrick M. Cassen,
 Donald K. Berry, & Robert P. Link. 590, 1060 (2003)

INSTRUMENTATION: DETECTORS

Refining Chandral ACIS Subpixel Event Repositioning Using a Backsideilluminated CCD Model. Jingqiang Li, Joel H. Kastner, Gregory Y. Prigozhin, & Norbert S. Schulz. 590, 586 (2003)

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The Observation of Sunspot Light-Bridge Structure and Dynamics. T. E. Berger & S. V. Berdyugina. 589, L117 (2003)

INSTRUMENTATION: MISCELLANEOUS

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INTERGALACTIC MEDIUM

- Measuring Feedback Using the Intergalactic Medium State and Evolution Inferred from the Soft X-Ray Background. Pengjie Zhang & Ue-Li Pen. 588, 704 (2003)
- Observed Non-Steady State Cooling and the Moderate Cluster Cooling Flow Model. Noam Soker & Laurence P. David. 589, 770 (2003)
- Inferring the Linear Power Spectrum from the Lyα Forest. Matias Zaldarriaga, Román Scoccimarro, & Lam Hui. 590, 1 (2003)
- Autocorrelation Function of the Soft X-Ray Background Produced by Warm-Hot Gas in Dark Halos. Xiang-Ping Wu & Yan-Jie Xue. 590, 8 (2003)
- Technique for Detecting Warm-Hot Intergalactic Gas in Quasar Ultraviolet Spectra. Luc Binette, Mario Rodríguez-Martínez, Sinhue Haro-Corzo, & Isidro Ballinas. 590, 58 (2003)
- High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)

INTERPLANETARY MEDIUM

- Observation of GeV Solar Energetic Particles from the 1997 November 6
 Event Using Milagrito. A. Falcone, R. Atkins, W. Benbow, D. Berley,
 M. L. Chen, D. G. Coyne, B. L. Dingus, D. E. Dorfan, R. W. Ellsworth,
 L. Fleysher, R. Fleysher, G. Gisler, J. A. Goodman, T. J. Haines, C. M.
 Hoffman, S. Hugenberger, L. A. Kelley, I. Leonor, J. F. McCullough, J. E.
 McEnery, R. S. Miller, A. I. Mincer, M. F. Morales, P. Nemethy, J. M.
 Ryan, B. Shen, A. Shoup, G. Sinnis, A. J. Smith, G. W. Sullivan, T. Tumer,
 K. Wang, M. O. Wascko, S. Westerhoff, D. A. Williams, T. Yang, & G. B.
 Yodh. 588, 557 (2003)
- The Geometry of Resonant Signatures in Debris Disks with Planets. Marc J. Kuchner & Matthew J. Holman. 588, 1110 (2003)
- Evidence for a Suprathermal Seed Population of Heavy Ions Accelerated by Interplanetary Shocks near 1 AU. M. I. Desai, G. M. Mason, J. R. Dwyer, J. E. Mazur, R. E. Gold, S. M. Krimigis, C. W. Smith, & R. M. Skoug. 588, 1149 (2003)
- Solar Particle Transport in a Dynamical Quasi-linear Theory. Wolfgang Dröge. 589, 1027 (2003)
- Discovery of Dust Trail of STARDUST Comet Sample Return Mission Target: 81P/Wild 2. M. Ishiguro, S. M. Kwon, Y. Sarugaku, S. Hasegawa, F. Usui, S. Nishiura, Y. Nakada, & H. Yano. 589, L101 (2003)
- Asterospheric Magnetic Fields and Winds of Cool Stars. Carolus J. Schrijver, Marc L. DeRosa, & Alan M. Title. 590, 493 (2003)
- Evolution of Magnetic Fields in Corotating Interaction Regions from 1 to 95 AU: Order to Chaos. L. F. Burlaga, C. Wang, J. D. Richardson, & N. F. Ness. 590, 554 (2003)
- On the Fluctuating Component of the Sun's Large-Scale Magnetic Field. Y.-M. Wang & N. R. Sheeley, Jr. 590, 1111 (2003)

ISM: ABUNDANCES

- A Sensitive Very Large Array Search for Small-Scale Glycine Emission toward OMC-1. J. M. Hollis, J. A. Pedelty, L. E. Snyder, P. R. Jewell, F. J. Lovas, Patrick Palmer, & S.-Y. Liu. 588, 353 (2003)
- Nonthermal Chemistry in Diffuse Clouds with Low Molecular Abundances. J. Zsargó & S. R. Federman. 589, 319 (2003)
- [Fe IV] Emission in Ionized Nebulae. Monica Rodriguez. 590, 296 (2003)
- A Survey of Acetic Acid toward Hot Molecular Cores. A. Remijan, L. E. Snyder, D. N. Friedel, S.-Y. Liu, & R. Y. Shah. 590, 314 (2003)
- Submillimeter Wave Astronomy Satellite Mapping Observations of Water Vapor around Sagittarius B2. David A. Neufeld, Edwin A. Bergin, Gary J. Melnick, & Paul F. Goldsmith. 590, 882 (2003)
- Interaction between the Outflow and the Core in IRAM 04191+1522. Shigehisa Takakuwa, Nagayoshi Ohashi, & Naomi Hirano. 590, 932 (2003)
- Nonthermal Emission from the Arches Cluster (G0.121+0.017) and the Origin of γ-Ray Emission from 3EG J1746–2851. F. Yusef-Zadeh, M. Nord, M. Wardle, C. Law, C. Lang, & T. J. W. Lazio. 590, L103 (2003)

ISM: ATOMS

- Are Compact High-Velocity Clouds Extragalactic Objects? *Philip R. Maloney & Mary E. Putman.* 589, 270 (2003)
- Distribution of the C 1 Emission in the ρ Ophiuchi Dark Cloud. Kazuhisa Kamegai, Masafumi Ikeda, Hiroyuki Maezawa, Tetsuya Ito, Mitsuhiro Iwata, Takeshi Sakai, Tomoharu Oka, Satoshi Yamamoto, Yutaro Sekimoto, Ken'ichi Tatematsu, Takashi Noguchi, Shuji Saito, Hideo Fujiwara, Hiroyuki Ozeki, Junji Inatani, & Masatoshi Ohishi. 589, 378 (2003)

ISM: BUBBLES

- The Absorption and Emission Kinematics in the z = 0.7450 Mg II Absorber toward Q1331+17. Sara L. Ellison, Gabriela Mallén-Ornelas, & Marcin Sawicki. 589, 709 (2003)
- Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martin A. Guerrero, & Margarita Rosado. 590, 306 (2003)
- The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebey, M. Fich, R. Taylor, Y. Cao, & T. Hancock. 590, 906 (2003)

ISM: CLOUDS

- A Sensitive Very Large Array Search for Small-Scale Glycine Emission toward OMC-1. J. M. Hollis, J. A. Pedelty, L. E. Snyder, P. R. Jewell, F. J. Lovas, Patrick Palmer, & S.-Y. Liu. 588, 353 (2003)
- The G11.11–0.12 Infrared-dark Cloud: Anomalous Dust and a Nonmagnetic Isothermal Model. Doug Johnstone, Jason D. Fiege, R. O. Redman, P. A. Feldman, & Sean J. Carey. 588, L37 (2003)
- The Distance to the Supernova Remnant CTB 87 and the Radial Velocity of the Perseus Arm toward $l = 75^{\circ}$, Derived from H I and CO Observations. Roland Kothes, Wolfgang Reich, Tyler Foster, & Do-Young Byun. 588, 852 (2003)
- A Coupled Dynamical and Chemical Model of Starless Cores of Magnetized Molecular Clouds. II. Chemical Differentiation. V. I. Shematovich, D. S. Wiebe, B. M. Shustov, & Zhi-Yun Li. 588, 894 (2003)
- Are Compact High-Velocity Clouds Extragalactic Objects? Philip R. Maloney & Mary E. Putman. 589, 270 (2003)
- A Search for Stellar Obscuration Events Due to Dark Clouds. A. J. Drake & K. H. Cook. 589, 281 (2003)
- Distribution of the C t Emission in the ρ Ophiuchi Dark Cloud. Kazuhisa Kamegai, Masafumi Ikeda, Hiroyuki Maezawa, Tetsuya Ito, Mitsuhiro Iwata, Takeshi Sakai, Tomoharu Oka, Satoshi Yamamoto, Yutaro Sekimoto, Ken'ichi Tatematsu, Takashi Noguchi, Shuji Saito, Hideo Fujiwara, Hiroyuki Ozeki, Junji Inatani, & Masatoshi Ohishi. 589, 378 (2003)
- Dense Gas Clouds and the Unidentified EGRET Sources. Mark Walker, Masaki Mori, & Michiko Ohishi. 589, 810 (2003)
- NGC 7538S—a High-Mass Protostar with a Massive Rotating Disk. Goeran Sandell, Melvyn Wright, & James R. Forster. 590, L45 (2003)
- Submillimeter Wave Astronomy Satellite Mapping Observations of Water Vapor around Sagittarius B2. David A. Neufeld, Edwin A. Bergin, Gary J. Melnick, & Paul F. Goldsmith. 590, 882 (2003)
- Two Molecular Clouds near M17. T. L. Wilson, M. M. Hanson, & D. Muders. 590, 895 (2003)

ISM: COSMIC RAYS

- An Explanation for Large Enhancements of Nitrogen Relative to Carbon and Oxygen in Solar ³He-rich Events. T. X. Zhang & J. X. Wang. 588, L57 (2003)
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- The Effect of Cosmic-Ray Diffusion on the Parker Instability. Dongsu Ryu, Jongsoo Kim, Seung Soo Hong, & T. W. Jones. 589, 338 (2003)
- Dense Gas Clouds and the Unidentified EGRET Sources. Mark Walker, Masaki Mori, & Michiko Ohishi. 589, 810 (2003)
- Magnetars in the Metagalaxy: An Origin for Ultra-High-Energy Cosmic Rays in the Nearby Universe. *Jonathan Arons*. 589, 871 (2003)
- Particle Transport in Tangled Magnetic Fields and Fermi Acceleration at Relativistic Shocks. *Martin Lemoine & Guy Pelletier*: 589, L73 (2003)
- The Superbubble Origin of ²²Ne in Cosmic Rays. J. C. Higdon & R. E. Lingenfelter, 590, 822 (2003)
- Nonthermal Emission from the Arches Cluster (G0.121+0.017) and the Origin of γ-Ray Emission from 3EG J1746–2851. F. Yusef-Zadeh, M. Nord, M. Wardle, C. Law, C. Lang, & T. J. W. Lazio. 590, L103 (2003)

ISM: DUST, EXTINCTION

- Cosmic Star Formation History Assocatied with Quasar Activity: An Approach Using the Black Hole-to-Bulge Mass Correlation. Y. P. Wang, T. Yamada, & Y. Taniguchi. 588, 113 (2003)
- Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features. Nanyao Lu, George Helou, Michael W. Werner, Harriet L. Dinerstein, Daniel A. Dale, Nancy A. Silbermann, Sangeeta Malhotra, Charles A. Beichman, & Thomas H. Jarrett. 588, 199 (2003)
- A Multitransition CO Study of the Antennae Galaxies NGC 4038/9. Ming Zhu, E. R. Seaquist, & Nario Kuno. 588, 243 (2003)
- A Method for Simultaneous Determination of A_V and R and Applications. Jorge R. Ducati, Daiana Ribeiro, & Sandro B. Rembold. 588, 344 (2003)
- The G11.11—0.12 Infrared-dark Cloud: Anomalous Dust and a Nonmagnetic Isothermal Model. Doug Johnstone, Jason D. Fiege, R. O. Redman, P. A. Feldman, & Sean J. Carey. 588, L37 (2003)
- Dust Grain Size Distributions from MRN to MEM. Geoffrey C. Clayton, Michael J. Wolff, Ulysses J. Sofia, K. D. Gordon, & K. A. Misselt. 588, 871 (2003)
- Magnetic Structure of a Dark Bok Globule. Jacques P. Vallée, Jane S. Greaves, & Jason D. Fiege. 588, 910 (2003)
- The First Detection of Spatially Resolved Mid-Infrared Scattered Light from a Protoplanetary Disk. C. McCabe, G. Duchêne, & A. M. Ghez. 588, L113 (2003)
- Dependence of H₂CO and CH₃OH Formation on Temperature and Thickness of H₂O-CO Ice during the Successive Hydrogenation of CO. *Naoki Watanabe, Takahiro Shiraki, & Akira Kouchi.* 588, L121 (2003)
- A Search for Stellar Obscuration Events Due to Dark Clouds. A. J. Drake & K. H. Cook. 589, 281 (2003)
- Radiative Torques on Interstellar Grains. III. Dynamics with Thermal Relaxation. *Joseph C. Weingartner & B. T. Draine*. 589, 289 (2003)
- The Pleiades Reflection Nebula. I. Ultraviolet, Optical, and Far-Infrared Imaging Photometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 347 (2003)
- The Pleiades Reflection Nebula. II. Simple Model Constraints on Dust Properties and Scattering Geometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 362 (2003)
- Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae. Miwa Goto, W. Gaessler, Yutaka Hayano, Masanori Iye, Yukiko Kamata, Tomio Kanzawa, Naoto Kobayashi, Yosuke Minowa, D. J. Saint-Jacques, Hideki Takami, Naruhisa Takato, & Hiroshi Terada. 589, 419 (2003)
- Circumnuclear Dust in Nearby Active and Inactive Galaxies. II. Bars, Nuclear Spirals, and the Fueling of Active Galactic Nuclei. Paul Martini, Michael W. Regan, John S. Mulchaey, & Richard W. Pogge. 589, 774 (2003)
- The Optical Gravitational Lensing Experiment: Is Interstellar Extinction toward the Galactic Center Anomalous? A. Udalski. 590, 284 (2003)
- Modeling the Infrared Emission from the HR 4796A Disk. Aigen Li & J. I. Lunine. 590, 368 (2003)
- Zinc Crystal Growth in Microgravity. B. P. Michael, Joseph A. Nuth III, & Lembit U. Lilleleht. 590, 579 (2003)

- Rapid Cooling of Dusty Gas in Elliptical Galaxies. William G. Mathews & Fabrizio Brighenti. 590, L5 (2003)
- A Hubble Space Telescope/WFPC2 Snapshot Survey of 2MASS-selected Red QSOs. Andrew R. Marble, Dean C. Hines, Gary D. Schmidt, Paul S. Smith, Jason A. Surace, Lee Armus, Roc M. Cutri, & Brant O. Nelson. 590, 707 (2003)

ISM: EVOLUTION

- The G11.11–0.12 Infrared-dark Cloud: Anomalous Dust and a Nonmagnetic Isothermal Model. *Doug Johnstone, Jason D. Fiege, R. O. Redman, P. A. Feldman, & Sean J. Carey.* 588, L37 (2003)
- CO Molecular Gas in Infrared-luminous Galaxies. Lihong Yao, E. R. Seaquist, Nario Kuno, & Loretta Dunne. 588, 771 (2003)
- Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae. Miwa Goto, W. Gaessler, Yutaka Hayano, Masanori Iye, Yukiko Kamata, Tomio Kanzawa, Naoto Kobayashi, Yosuke Minowa, D. J. Saint-Jacques, Hideki Takami, Naruhisa Takato, & Hiroshi Terada. 589, 419 (2003)

ISM: GENERAL

- Surprisingly Little O vt Emission Arises in the Local Bubble. R. L. Shelton. 589, 261 (2003)
- Thermal Conduction in Magnetized Turbulent Gas. Jungyeon Cho, A. Lazarian, Albert Honein, Bernard Knaepen, Stavros Kassinos, & Parviz Moin. 589, L77 (2003)

ISM: GLOBULES

Magnetic Structure of a Dark Bok Globule. *Jacques P. Vallée, Jane S. Greaves,* & *Jason D. Fiege.* 588, 910 (2003)

ISM: HIREGIONS

- Observations of Water Masers and Radio Continuum Emission in AFGL 2591.

 Miguel A. Trinidad, Salvador Curiel, Jorge Cantó, Paola D'Alessio, Luis
 F. Rodríguez, José M. Torrelles, José F. Gómez, Nimesh Patel, & Paul T. P.

 Ho. 589, 386 (2003)
- [Fe IV] Emission in Ionized Nebulae. Monica Rodriguez. 590, 296 (2003)
- Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martín A. Guerrero, & Margarita Rosado. 590, 306 (2003)
- The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebey, M. Fich, R. Taylor, Y. Cao, & T. Hancock. 590, 906 (2003)

ISM: HERBIG-HARO OBJECTS

- Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri. Tae-Soo Pyo, Naoto Kobayashi, Masahiko Hayashi, Hiroshi Terada, Miwa Goto, Hideki Takami, Naruhisa Takato, Wolfgang Gaessler, Tomonori Usuda, Takuya Yamashita, Alan T. Tokunaga, Yutaka Hayano, Yukiko Kamata, Masanori Iye, & Yosuke Minowa. 590, 340 (2003)
- Warm Molecular Hydrogen and Ionized Neon in the HH 2 Outflow. Bertrand LeFloch, J. Cernicharo, S. Cabrit, A. Noriega-Crespo, A. Moro-Martin, & D. Cesarsky. 590, L41 (2003)

ISM: INDIVIDUAL

Name: Cassiopeia A

The First Measurement of Cassiopeia A's Forward Shock Expansion Rate. Tracey DeLaney & Lawrence Rudnick. 589, 818 (2003)

Name: Local Bubble

Surprisingly Little O vi Emission Arises in the Local Bubble. R. L. Shelton. 589, 261 (2003)

Name: Perseus

The Spectral Correlation Function of Molecular Clouds: A Statistical Test for Theoretical Models. Paolo Padoan, Alyssa A. Goodman, & Mika Juvela. 588, 881 (2003)

Name: Pleiades

- The Pleiades Reflection Nebula. I. Ultraviolet, Optical, and Far-Infrared Imaging Photometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 347 (2003)
- The Pleiades Reflection Nebula. II. Simple Model Constraints on Dust Properties and Scattering Geometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 362 (2003)

Name: Rosette Molecular Complex

The Spectral Correlation Function of Molecular Clouds: A Statistical Test for Theoretical Models. Paolo Padoan, Alyssa A. Goodman, & Mika Juvela. 588, 881 (2003)

Name: Sagittarius B2

A Survey of Acetic Acid toward Hot Molecular Cores. A. Remijan, L. E. Snyder, D. N. Friedel, S.-Y. Liu, & R. Y. Shah. 590, 314 (2003)

Submillimeter Wave Astronomy Satellite Mapping Observations of Water Vapor around Sagittarius B2. David A. Neufeld, Edwin A. Bergin, Gary J. Melnick, & Paul F. Goldsmith. 590, 882 (2003)

Name: DG Tauri

Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri. Tae-Soo Pyo, Naoto Kobayashi, Masahiko Hayashi, Hiroshi Terada, Miwa Goto, Hideki Takami, Naruhisa Takato, Wolfgang Gaessler, Tomonori Usuda, Takuya Yamashita, Alan T. Tokunaga, Yutaka Hayano, Yukiko Kamata, Masanori Iye, & Yosuke Minowa. 590, 340 (2003)

Name: Taurus Molecular Cloud

The Spectral Correlation Function of Molecular Clouds: A Statistical Test for Theoretical Models. Paolo Padoan, Alyssa A. Goodman, & Mika Juvela. 588, 881 (2003)

Name: Vela Supernova Remnant

Optical and Far-Ultraviolet Spectroscopy of Knot D in the Vela Supernova Remnant. Ravi Sankrit, William P. Blair, & John C. Raymond. 589, 242 (2003)

Alphanumeric: AFGL 2591

Observations of Water Masers and Radio Continuum Emission in AFGL 2591. Miguel A. Trinidad, Salvador Curiel, Jorge Cantó, Paola D'Alessio, Luis F. Rodríguez, José M. Torrelles, José F. Gómez, Nimesh Patel, & Paul T. P. Ho. 589, 386 (2003)

Alphanumeric: AX J1843.8-0352

Chandra Observations of a Nonthermal Supernova Remnant Candidate AX J1843.8–0352 and Its Surroundings. Masaru Ueno, Aya Bamba, Katsuji Koyama, & Ken Ebisawa. 588, 338 (2003)

Alphanumeric: CTB 87

The Distance to the Supernova Remnant CTB 87 and the Radial Velocity of the Perseus Arm toward $l = 75^{\circ}$. Derived from H 1 and CO Observations. Roland Kothes, Wolfgang Reich, Tyler Foster, & Do-Young Byun. 588, 852 (2003)

Alphanumeric: DEM L71

The Physics of Supernova Blast Waves. I. Kinematics of DEM L71 in the Large Magellanic Cloud. Parviz Ghavamian, Cara E. Rakowski, John P. Hughes, & T. B. Williams. 590, 833 (2003)

The Physics of Supernova Remnant Blast Waves. II. Electron-Ion Equilibration in DEM L71 in the Large Magellanic Cloud. Cara E. Rakowski, Parviz Ghavamian, & John P. Hughes. 590, 846 (2003)

Alphanumeric: G11.0+0.0

Diffuse Hard X-Ray Sources Discovered with the ASCA Galactic Plane Survey. Aya Bamba, Masaru Ueno, Katsuji Koyama, & Shigeo Yamauchi. 589, 253 (2003)

Alphanumeric: G18.0-0.7

XMM-Newton Observations of PSR B1823—13: An Asymmetric Synchrotron Nebula around a Vela-like Pulsar. B. M. Gaensler, N. S. Schulz, V. M. Kaspi, M. J. Pivovaroff, & W. E. Becker. 588, 441 (2003)

Alphanumeric: G25.5+0.0

Diffuse Hard X-Ray Sources Discovered with the ASCA Galactic Plane Survey. Aya Bamba, Masaru Ueno, Katsuji Koyama, & Shigeo Yamauchi. 589, 253 (2003)

Alphanumeric: G26.6-0.1

Diffuse Hard X-Ray Sources Discovered with the ASCA Galactic Plane Survey. Aya Bamba, Masaru Ueno, Katsuji Koyama, & Shigeo Yamauchi. 589, 253 (2003)

Alphanumeric: HH 1-2

Warm Molecular Hydrogen and Ionized Neon in the HH 2 Outflow. Bertrand LeFloch, J. Cernicharo, S. Cabrit, A. Noriega-Crespo, A. Moro-Martin, & D. Cesarsky. 590, L41 (2003)

Alphanumeric: HH 158

Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri. Tae-Soo Pyo, Naoto Kobayashi, Masahiko Hayashi, Hiroshi Terada, Miwa Goto, Hideki Takami, Naruhisa Takato, Wolfgang Gaessler, Tomonori Usuda, Takuya Yamashita, Alan T. Tokumaga, Yutaka Hayano, Yukiko Kamata, Masanori Iye, & Yosuke Minowa. 590, 340 (2003)

Alphanumeric: IRAM 04191+1522

Interaction between the Outflow and the Core in IRAM 04191+1522. Shigehisa Takakuwa, Nagayoshi Ohashi, & Naomi Hirano. 590, 932 (2003)

Alphanumeric: L1544

A Coupled Dynamical and Chemical Model of Starless Cores of Magnetized Molecular Clouds. II. Chemical Differentiation. V. I. Shematovich, D. S. Wiebe, B. M. Shustov, & Zhi-Yun Li. 588, 894 (2003)

Alphanumeric: L1688

Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud. Kazuhisa Kamegai, Masafumi Ikeda, Hiroyuki Maezawa, Tetsuya Ito, Mitsuhiro Iwata, Takeshi Sakai, Tomoharu Oka, Satoshi Yamamoto, Yutaro Sekimoto, Ken'ichi Tatematsu, Takashi Noguchi, Shuji Saito, Hideo Fujiwara, Hiroyuki Ozeki, Junji Inatani, & Masatoshi Ohishi. 589, 378 (2003)

Alphanumeric: M17

Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martin A. Guerrero, & Margarita Rosado. 590, 306 (2003)

Alphanumeric: OMC-1

A Sensitive Very Large Array Search for Small-Scale Glycine Emission toward OMC-1. J. M. Hollis, J. A. Pedelty, L. E. Snyder, P. R. Jewell, F. J. Lovas, Patrick Palmer, & S.-Y. Liu. 588, 353 (2003)

Alphanumeric: SN 1006

Small-Scale Structure of the SN 1006 Shock with Chandra Observations. Aya Bamba, Ryo Yamazaki, Masaru Ueno, & Katsuji Koyama. 589, 827 (2003)

Alphanumeric: SNR 0505-67.9

The Physics of Supernova Blast Waves. I. Kinematics of DEM L71 in the Large Magellanic Cloud. Parviz Ghavamian, Cara E. Rakowski, John P. Hughes, & T. B. Williams. 590, 833 (2003)

The Physics of Supernova Remnant Blast Waves. II. Electron-Ion Equilibration in DEM L71 in the Large Magellanic Cloud. Cara E. Rakowski, Parviz Ghavamian, & John P. Hughes. 590, 846 (2003)

Alphanumeric: W4 Superbubble

The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebey, M. Fich, R. Taylor, Y. Cao, & T. Hancock. 590, 906 (2003)

Alphanumeric: W51

A Survey of Acetic Acid toward Hot Molecular Cores. A. Remijan, L. E. Snyder, D. N. Friedel, S.-Y. Liu, & R. Y. Shah. 590, 314 (2003)

ISM: JETS AND OUTFLOWS

Observations of Water Masers and Radio Continuum Emission in AFGL 2591. Miguel A. Trinidad, Salvador Curiel, Jorge Cantó, Paola D'Alessio, Luis F. Rodríguez, José M. Torrelles, José F. Gómez, Nimesh Patel, & Paul T. P. Ho. 589, 386 (2003)

Global Asymptotic Solutions for Magnetohydrodynamic Jets and Winds. 1. Okamoto. 589, 671 (2003)

A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy. L. J. Greenhill. R. S. Booth, S. P. Ellingsen, J. R. Herrnstein, D. L. Jauncey, P. M. McCulloch, J. M. Moran, R. P. Norris, J. E. Reynolds, & A. K. Tzioumis. 590, 162 (2003)

Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri. Tae-Soo Pyo, Naoto Kobayashi, Masahiko Hayashi, Hiroshi Terada, Miwa Goto, Hideki Takami, Naruhisa Takato, Wolfgang Gaessler, Tomonori Usuda, Takuya Yamashita, Alan T. Tokunaga, Yutaka Hayano, Yukiko Kamata, Masanori Iye, & Yosuke Minowa. 590, 340 (2003)

A Standard Kinetic Energy Reservoir in Gamma-Ray Burst Afterglows. E. Berger, S. R. Kulkarni, & D. A. Frail. 590, 379 (2003)

Warm Molecular Hydrogen and Ionized Neon in the HH 2 Outflow. Bertrand LeFloch, J. Cernicharo, S. Cabrit, A. Noriega-Crespo, A. Moro-Martin, & D. Cesarsky. 590, L41 (2003)

Trapped Protostellar Winds and Their Breakout. Francis P. Wilkin & Steven W. Stahler. 590, 917 (2003)

Interaction between the Outflow and the Core in IRAM 04191+1522. Shigehisa Takakuwa, Nagayoshi Ohashi, & Naomi Hirano. 590, 932 (2003)

Locating the Launching Region of T Tauri Winds: The Case of DG Tauri. Jeffrey M. Anderson, Zhi-Yun Li, Ruben Krasnopolsky, & Roger D. Blandford. 590, L107 (2003)

ISM: KINEMATICS AND DYNAMICS

- The Distance to the Supernova Remnant CTB 87 and the Radial Velocity of the Perseus Arm toward $l = 75^{\circ}$, Derived from H I and CO Observations. Roland Kothes, Wolfgang Reich, Tyler Foster, & Do-Young Byun. 588, 852 (2003)
- The Spectral Correlation Function of Molecular Clouds: A Statistical Test for Theoretical Models. Paolo Padoan, Alyssa A. Goodman, & Mika Juvela. 588, 881 (2003)
- The Physics of Supernova Blast Waves. 1. Kinematics of DEM L71 in the Large Magellanic Cloud. Parviz Ghavamian, Cara E. Rakowski, John P. Hughes, & T. B. Williams. 590, 833 (2003)

ISM: LINES AND BANDS

Infrared Emission of Normal Galaxies from 2.5 to 12 Microns: Infrared Space Observatory Spectra, Near-Infrared Continuum, and Mid-Infrared Emission Features. Nanyao Lu, George Helou, Michael W. Werner, Harriet L. Dinerstein, Daniel A. Dale, Nancy A. Silbermann, Sangeeta Malhotra, Charles A. Beichman, & Thomas H. Jarrett. 588, 199 (2003)

ISM: MAGNETIC FIELDS

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- Global Asymptotic Solutions for Magnetohydrodynamic Jets and Winds. I. Okamoto, 589, 671 (2003)
- Suppression of Fast Reconnection by Magnetic Shear. Fabian Heitsch & Ellen G. Zweibel. 590, 291 (2003)

ISM: MOLECULES

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- A Sensitive Very Large Array Search for Small-Scale Glycine Emission toward OMC-1. J. M. Hollis, J. A. Pedelty, L. E. Snyder, P. R. Jewell, F. J. Lovas, Patrick Palmer, & S.-Y. Liu. 588, 353 (2003)
- CO Emission from Disks around AB Aurigae and HD 141569: Implications for Disk Structure and Planet Formation Timescales. Sean D. Brittain, Terrence W. Rettig. Theodore Simon, Craig Kulesa, Michael A. DiSanti, & Neil Dello Russo. 588, 535 (2003)
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- CO Molecular Gas in Infrared-luminous Galaxies. Lihong Yao, E. R. Seaquist, Nario Kuno, & Loretta Dunne. 588, 771 (2003)
- A Coupled Dynamical and Chemical Model of Starless Cores of Magnetized Molecular Clouds. II. Chemical Differentiation. V. I. Shematovich, D. S. Wiebe, B. M. Shustov, & Zhi-Yun Li. 588, 894 (2003)
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- Nonthermal Chemistry in Diffuse Clouds with Low Molecular Abundances. J. Zsargó & S. R. Federman. 589, 319 (2003)
- A Warped Accretion Disk and Wide-Angle Outflow in the Inner Parsec of the Circinus Galaxy. L. J. Greenhill, R. S. Booth, S. P. Ellingsen, J. R. Herrnstein, D. L. Jauncey, P. M. McCulloch, J. M. Moran, R. P. Norris, J. E. Revnolds, & A. K. Tzioumis. 590, 162 (2003)
- A Survey of Acetic Acid toward Hot Molecular Cores. A. Remijan, L. E. Snyder, D. N. Friedel, S.-Y. Liu, & R. Y. Shah. 590, 314 (2003)
- Images of Astrophysical Masers and Their Variability in a Turbulent Medium: The 25 GHz Methanol Masers. A. M. Sobolev, W. D. Watson, & V. A. Okorokov. 590, 333 (2003)
- Warm Molecular Hydrogen and Ionized Neon in the HH 2 Outflow. Bertrand LeFloch, J. Cernicharo, S. Cabrit, A. Noriega-Crespo, A. Moro-Martin, & D. Cesarsky. 590, L41 (2003)
- The Radio Spectrum of the Phenyl Radical. M. C. McCarthy, R. J. McMahon, C. A. Gottlieb, J. B. Dudek, J. F. Stanton, & P. Thaddeus. 590, L61 (2003)
- Photodestruction of Relevant Interstellar Molecules in Ice Mixtures. Hervé Cottin, Marla H. Moore, & Yves Bénilan. 590, 874 (2003)
- Submillimeter Wave Astronomy Satellite Mapping Observations of Water Vapor around Sagittarius B2. David A. Neufeld, Edwin A. Bergin, Gary J. Melnick, & Paul F. Goldsmith. 590, 882 (2003)
- Two Molecular Clouds near M17. T. L. Wilson, M. M. Hanson, & D. Muders. 590, 895 (2003)

- Interaction between the Outflow and the Core in IRAM 04191+1522. Shigehisa Takakuwa, Nagayoshi Ohashi, & Naomi Hirano. 590, 932 (2003)
- Accurate Laboratory Wavelengths of the Vacuum Ultraviolet $A(\Upsilon'=3)-X(\Upsilon''=0)$ Band of $^{12}C^{17}O$ and $^{12}C^{18}O$. Christine Steinmann, Erich G. Rohwer, & Herbert Stafast. 590, L123 (2003)

ISM: PLANETARY NEBULAE: GENERAL

Abundance Anomalies in the X-Ray Spectra of Planetary Nebulae NGC 7027 and BD +30°3639. Holly L. Maness, Saega D. Vrtilek, Joel H. Kastner, & Noam Soker. 589, 439 (2003)

ISM: PLANETARY NEBULAE: INDIVIDUAL

NGC Number: NGC 7027

Abundance Anomalies in the X-Ray Spectra of Planetary Nebulae NGC 7027 and BD +30° 3639. Holly L. Maness, Saeqa D. Vrtilek, Joel H. Kastner, & Noam Soker. 589, 439 (2003)

Alphanumeric: BD +30°3639

Abundance Anomalies in the X-Ray Spectra of Planetary Nebulae NGC 7027 and BD +30°3639. Holly L. Maness, Saeqa D. Vrtilek, Joel H. Kastner, & Noam Soker. 589, 439 (2003)

ISM: REFLECTION NEBULAE

- The Pleiades Reflection Nebula. I. Ultraviolet, Optical, and Far-Infrared Imaging Photometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 347 (2003)
- The Pleiades Reflection Nebula. II. Simple Model Constraints on Dust Properties and Scattering Geometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 362 (2003)

ISM: STRUCTURE

- The G11.11—0.12 Infrared-dark Cloud: Anomalous Dust and a Nonmagnetic Isothermal Model. Doug Johnstone, Jason D. Fiege, R. O. Redman, P. A. Feldman, & Sean J. Carey. 588, L37 (2003)
- The Pleiades Reflection Nebula. II. Simple Model Constraints on Dust Properties and Scattering Geometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 362 (2003)
- Circumnuclear Dust in Nearby Active and Inactive Galaxies. II. Bars, Nuclear Spirals, and the Fueling of Active Galactic Nuclei. Paul Martini, Michael W. Regan, John S. Mulchaey, & Richard W. Pogge. 589, 774 (2003)
- A Turbulent Origin for Flocculent Spiral Structure in Galaxies. Bruce G. Elmegreen, Debra Meloy Elmegreen, & Samuel N. Leitner. 590, 271 (2003)
- On the Origin of the Global Schmidt Law of Star Formation. Andrey V. Kravtsov. 590, L1 (2003)
- The Impact of Ionizing Stars on the Diffuse Interstellar Medium: A Swept-Up Shell and Ionized Halo around the W4 Chimney/Superbubble. S. Terebey, M. Fich, R. Taylor, Y. Cao, & T. Hancock. 590, 906 (2003)

ISM: SUPERNOVA REMNANTS

- Chandra Observations of a Nonthermal Supernova Remnant Candidate AX J1843.8—0352 and Its Surroundings. Masaru Ueno, Aya Bamba, Katsuji Koyama, & Ken Ebisawa. 588, 338 (2003)
- XMM-Newton Observations of PSR B1823—13: An Asymmetric Synchrotron Nebula around a Vela-like Pulsar. B. M. Gaensler, N. S. Schulz, V. M. Kaspi, M. J. Pivovaroff, & W. E. Becker. 588, 441 (2003)
- The Distance to the Supernova Remnant CTB 87 and the Radial Velocity of the Perseus Arm toward $l = 75^{\circ}$, Derived from H 1 and CO Observations. Roland Kothes, Wolfgang Reich, Tyler Foster, & Do-Young Byun. 588, 852 (2003)
- Optical and Far-Ultraviolet Spectroscopy of Knot D in the Vela Supernova Remnant. Ravi Sankrit, William P. Blair, & John C. Raymond. 589, 242 (2003)
- Diffuse Hard X-Ray Sources Discovered with the ASCA Galactic Plane Survey. Aya Bamba, Masaru Ueno, Katsuji Koyama, & Shigeo Yamauchi. 589, 253 (2003)
- The First Measurement of Cassiopeia A's Forward Shock Expansion Rate. Tracey DeLaney & Lawrence Rudnick. 589, 818 (2003)
- Small-Scale Structure of the SN 1006 Shock with Chandra Observations. Aya Bamba, Ryo Yamazaki, Masaru Ueno, & Katsuji Koyama. 589, 827 (2003)
- Magnetars in the Metagalaxy: An Origin for Ultra-High-Energy Cosmic Rays in the Nearby Universe. *Jonathan Arons*. 589, 871 (2003)
- Discovery of Radio/X-Ray/Optical Resolved Supernova Remnants in the Center of the Andromeda Galaxy. Albert Kong, L. O. Sjouwerman, B. F. Williams, M. R. Garcia, & J. R. Dickel. 590, L21 (2003)

- The Physics of Supernova Blast Waves. I. Kinematics of DEM L71 in the Large Magellanic Cloud. Parviz Ghavamian, Cara E. Rakowski, John P. Hughes, & T. B. Williams. 590, 833 (2003)
- The Physics of Supernova Remnant Blast Waves. II. Electron-Ion Equilibration in DEM L71 in the Large Magellanic Cloud. Cara E. Rakowski, Parviz Ghavamian, & John P. Hughes. 590, 846 (2003)

KUIPER BELT

- Detections of OH toward the Extreme Carbon Star IRC +10216. K. E. Saavik Ford, David A. Neufeld, Paul F. Goldsmith, & Gary J. Melnick. 589, 430 (2003)
- Kuiper Belt Object Sizes and Distances from Occultation Observations. Asantha Cooray, 589, L97 (2003)

LINE: IDENTIFICATION

- [Fe IV] Emission in Ionized Nebulae. Monica Rodriguez. 590, 296 (2003)
- Discrete X-Ray Signatures of a Photoionized Plasma above the Accretion Disk of the Neutron Star EXO 0748–676. M. A. Jimenez-Garate, N. S. Schulz, & H. L. Marshall. 590, 432 (2003)
- Emission-Line Spectra of Ar IX-Ar XVI in the Soft X-Ray Region 20-50 Å.

 J. K. Lepson, P. Beiersdorfer, E. Behar, & S. M. Kahn. 590, 604 (2003)
- The Radio Spectrum of the Phenyl Radical. M. C. McCarthy, R. J. McMahon, C. A. Gottlieb, J. B. Dudek, J. F. Stanton, & P. Thaddeus. 590, L61 (2003)

LINE: PROFILES

- Far Ultraviolet Spectroscopic Explorer Snapshot Survey of O vi Variability in the Winds of 66 OB-Type Stars. N. Lehner, A. W. Fullerton, D. Massa, K. R. Sembach, & J. Zsargó. 589, 526 (2003)
- The Reuven Ramaty High Energy Solar Spectroscopic Imager Observation of the 1809 keV Line from Galactic ²⁶Al. D. M. Smith. 589, L55 (2003)

MAGNETIC FIELDS

- Lowering Infrared Cluster Magnetic Field Strengths: The Radio Galaxy Contributions. Lawrence Rudnick & Katherine M. Blundell. 588, 143 (2003)
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- Dynamics of Relativistic Reconnection. Maxim Lyutikov & Dmitri Uzdensky. 589, 893 (2003)
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MAGNETOHYDRODYNAMICS: MHD

- Models of Three-dimensional Flux Ropes. Joachim Birn, Terry G. Forbes, & Karl Schindler. 588, 578 (2003)
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- Magnetic Helicity Injection by Horizontal Flows in the Quiet Sun. Mutual-Helicity Flux. B. T. Welsch & D. W. Longcope. 588, 620 (2003)
- On the Formation of Magnetic Structures by the Combined Action of Velocity Shear and Magnetic Boynancy. *Kelly S. Cline, Nicholas H. Brummell, & Fausto Cattaneo.* 588, 630 (2003)
- Gravity Wave-driven Flows in the Solar Tachocline. II. Stationary Flows. Eun-jin Kim & K. B. MacGregor. 588, 645 (2003)
- A Three-dimensional Flux Rope Model for Coronal Mass Ejections Based on a Loss of Equilibrium. Ilia I. Roussev, Terry G. Forbes, Tamas I. Gombosi, Igor V. Sokolov, Darren L. DeZeeuw, & Joachim Birn. 588, L45 (2003)
- Large Mixing Angle Oscillations as a Probe of the Deep Solar Interior. C. Burgess, N. S. Dzhalilov, M. Maltoni, T. I. Rashba, V. B. Semikoz, M. A. Tórtola, & J. W. F. Valle. 588, L65 (2003)
- A Coupled Dynamical and Chemical Model of Starless Cores of Magnetized Molecular Clouds. II. Chemical Differentiation. V. I. Shematovich, D. S. Wiebe, B. M. Shustov, & Zhi-Yun Li. 588, 894 (2003)
- The Effect of Cosmic-Ray Diffusion on the Parker Instability. Dongsu Ryu. Jongsoo Kim, Seung Soo Hong, & T. W. Jones. 589, 338 (2003)
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- A Numerical Method for General Relativistic Magnetohydrodynamics. Jean-Pierre De Villiers & John F. Hawley. 589, 458 (2003)

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- Solar Wind Speed and Temperature outside 10 AU and the Termination Shock. Y. C. Whang, L. F. Burlaga, Y.-M. Wang, & N. R. Sheeley, Jr. 589, 635 (2003)
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- Time-dependent Ionization in Dynamic Solar and Stellar Atmospheres. I. Methods. W. Rammacher & P. Ulmschneider. 589, 988 (2003)
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- The Emergence of a Twisted Magnetic Flux Tube into a Preexisting Coronal Arcade. Y. Fan & S. E. Gibson. 589, L105 (2003)
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- Correlations on Arcsecond Scales between Chromospheric and Transition Region Emission in Active Regions. B. De Pontieu, T. Tarbell, & R. Erdélyi. 590, 502 (2003)
- Evolution of Magnetic Fields in Corotating Interaction Regions from 1 to 95 AU: Order to Chaos. L. F. Burlaga, C. Wang, J. D. Richardson, & N. F. Ness. 590, 554 (2003)
- Fast Magnetic Reconnection via Jets and Current Micro-Sheets. *Paul Watson & I. J. D. Craig.* 590, L57 (2003)
- Spectral Properties of Compressible Magnetohydrodynamic Turbulence from Numerical Simulations. Jason G. Verstuto, Eve C. Ostriker, & James M. Stone. 590, 858 (2003)
- Locating the Launching Region of T Tauri Winds: The Case of DG Tauri. Jeffrey M. Anderson, Zhi-Yun Li, Ruben Krasnopolsky, & Roger D. Blandford. 590, L107 (2003)

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- A Polarization Survey of SiO Maser Variability in Evolved Stars. J. Glenn, P. R. Jewell, R. Fourre, & L. Miaja. 588, 478 (2003)
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 Miguel A. Trinidad, Salvador Curiel, Jorge Cantó, Paola D'Alessio, Luis
 F. Rodríguez, José M. Torrelles, José F. Gómez, Nimesh Patel, & Paul T. P.
 Ho. 589, 386 (2003)
- The Flaring H₂O Megamaser and Conpact Radio Source in Markarian 348.
 A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
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- Images of Astrophysical Masers and Their Variability in a Turbulent Medium: The 25 GHz Methanol Masers. A. M. Sobolev, W. D. Watson, & V. A. Okorokov, 590, 333 (2003)
- The Three-dimensional Kinematics of Water Masers around the Semiregular Variable RT Virginis. Hiroshi Imai, Katsunori M. Shibata, Kevin B. Marvel, Philip J. Diamond, Tetsuo Sasao, Makoto Miyoshi, Makoto Inoue, Victor Migenes, & Yasuhiro Murata. 590, 460 (2003)

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- The Pleiades Reflection Nebula. II. Simple Model Constraints on Dust Properties and Scattering Geometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 362 (2003)
- Emission-Line Spectra of Ar IX-Ar XVI in the Soft X-Ray Region 20-50 Å. J. K. Lepson, P. Beiersdorfer, E. Behar, & S. M. Kahn. 590, 604 (2003)

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- Point Sources in the Wilkinson Microwave Anisotropy Probe Sky Maps. Elena Pierpaoli. 589, 58 (2003)
- A New Search Technique for Short Orbital Period Binary Pulsars. Scott M. Ransom, James M. Cordes, & Stephen S. Eikenberry. 589, 911 (2003)
- High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)
- Refining Chandral ACIS Subpixel Event Repositioning Using a Backsideilluminated CCD Model. Jingqiang Li, Joel H. Kastner, Gregory Y. Prigozhin, & Norbert S. Schulz. 590, 586 (2003)
- Non-Gaussianity of the Derived Maps from the First-Year Wilkinson Microwave Anisotropy Probe Data. Lung-Yih Chiang, Pavel D. Naselsky, Oleg V. Verkhodanov, & Michael J. Way. 590, L65 (2003)

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- Zinc Crystal Growth in Microgravity. B. P. Michael, Joseph A. Nuth III, & Lembit U. Lilleleht. 590, 579 (2003)
- Emission-Line Spectra of Ar IX-Ar XVI in the Soft X-Ray Region 20-50 Å.

 J. K. Lepson, P. Beiersdorfer, E. Behar, & S. M. Kahn. 590, 604 (2003)
- Photodestruction of Relevant Interstellar Molecules in Ice Mixtures. Hervé Cottin, Marla H. Moore, & Yves Bénilan. 590, 874 (2003)
- Accurate Laboratory Wavelengths of the Vacuum Ultraviolet $A(\Upsilon'=3)-X(\Upsilon''=0)$ Band of $^{12}C^{17}O$ and $^{12}C^{18}O$. Christine Steinmann, Erich G. Rohwer, & Herbert Stafast. 590, L123 (2003)

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- Models of the Morphology, Kinematics, and Star Formation History of the Prototypical Collisional Starburst System NGC 7714/7715=Arp 284. Curtis Struck & Beverly J. Smith. 589, 157 (2003)
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- On the Early Evolution of Forming Jovian Planets. II. Analysis of Accretion and Gravitational Torques. Andrew F. Nelson & Willy Benz. 589, 578 (2003)
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- Spectral Properties of Compressible Magnetohydrodynamic Turbulence from Numerical Simulations. Jason G. Verstuto, Eve C. Ostriker, & James M. Stone. 590, 858 (2003)

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- Age, Metallicity, and Star Formation History of Cluster Galaxies at z ~ 0.3. P. Merluzzi, F. La Barbera, M. Massarotti, G. Busarello, & M. Capaccioli. 589, 147 (2003)
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- Saturated Hydrocarbons in Comet 153P/Ikeya-Zhang: Ethane, Methane, and Monodeuterio-Methane. Hideyo Kawakita, Jun-ichi Watanabe, Daisuke Kinoshita, Masateru Ishiguro, & Ryosuke Nakamura, 590, 573 (2003)
- The Radio Spectrum of the Phenyl Radical. M. C. McCarthy, R. J. McMahon, C. A. Gottlieb, J. B. Dudek, J. F. Stanton, & P. Thaddeus. 590, L61 (2003)
- Accurate Laboratory Wavelengths of the Vacuum Ultraviolet $A(\Upsilon'=3)-X(\Upsilon''=0)$ Band of $^{12}C^{17}O$ and $^{12}C^{18}O$. Christine Steinmann, Erich G. Rohwer, & Herbert Stafast. 590, L123 (2003)

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- Precise Millimeter-Wave Laboratory Frequences for CS and C³⁴S. C. A. Gottlieb, P. C. Myers, & P. Thaddeus: 588, 655 (2003)
- Nonequilibrium CO Chemistry in the Solar Atmosphere. A. Asensio Ramos, J. Trujillo Bueno, M. Carlsson, & J. Cernicharo. 588, L61 (2003)
- Theoretical Spectra and Atmospheres of Extrasolar Giant Planets. David Sudarsky, Adam Burrows, & Ivan Hubeny. 588, 1121 (2003)
- Dependence of H₂CO and CH₃OH Formation on Temperature and Thickness of H₂O-CO Ice during the Successive Hydrogenation of CO. Naoki Watanabe, Takahiro Shiraki, & Akira Kouchi. 588, L121 (2003)
- The Radio Spectrum of the Phenyl Radical. M. C. McCarthy, R. J. McMahon, C. A. Gottlieb, J. B. Dudek, J. F. Stanton, & P. Thaddeus. 590, L61 (2003)
- Photodestruction of Relevant Interstellar Molecules in Ice Mixtures. Hervé Cottin, Marla H. Moore, & Yves Bénilan. 590, 874 (2003)
- Submillimeter Wave Astronomy Satellite Mapping Observations of Water Vapor around Sagittarius B2. David A. Neufeld, Edwin A. Bergin, Gary J. Melnick, & Paul F. Goldsmith. 590, 882 (2003)

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Distribution of the C I Emission in the ρ Ophiuchi Dark Cloud. Kazuhisa Kamegai, Masafumi Ikeda, Hiroyuki Maezawa, Tetsuya Ito, Mitsuhiro Iwata, Takeshi Sakai, Tomoharu Oka, Satoshi Yamamoto, Yutaro Sekimoto, Ken'ichi Tatematsu, Takashi Noguchi, Shuji Saito, Hideo Fujiwara, Hiroyuki Ozeki, Junji Inatani, & Masatoshi Ohishi. 589, 378 (2003)

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Chemical Composition of the Early Universe. Martin Harwit & Marco Spaans. 589, 53 (2003)

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The Reuven Ramaty High Energy Solar Spectroscopic Imager Observation of the 1809 keV Line from Galactic ²⁶Al. D. M. Smith. 589, L55 (2003)

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Eddington-limited X-Ray Bursts as Distance Indicators. I. Systematic Trends and Spherical Symmetry in Bursts from 4U 1728–34. Duncan K. Galloway, Dimitrios Psaltis, Deepto Chakrabarty, & Michael P. Muno. 590, 999 (2003)

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Discovery of Highly Dynamic Matter Enhancements along the Polar Axis and Equatorial Plane in the Luminous Blue Variable Binary HD 5980. A. Villar-Sbaffi, Anthony F. J. Moffat, & N. St-Louis. 590, 483 (2003)

Radio Polarization of the Young High-Magnetic-Field Pulsar PSR J1119—6127.
Fronefield Crawford & Nathan C. Keim. 590, 1020 (2003)

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Transfer of Polarized Radiation in Strongly Magnetized Plasmas and Thermal Emission from Magnetars: Effect of Vacuum Polarization. *Dong Lai & Wynn C. G. Ho.* 588, 962 (2003)

Theoretical Spectra and Atmospheres of Extrasolar Giant Planets. David Sudarsky, Adam Burrows, & Ivan Hubenv. 588, 1121 (2003)

On the Indirect Detection of Sodium in the Atmosphere of the Planetary Companion to HD 209458. J. J. Fortney, D. Sudarsky, I. Hubeny, C. S. Cooper, W. B. Hubbard, A. Burrows, & J. I. Lunine. 589, 615 (2003)

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The Speed and Orientation of the Parsec-Scale Jet in 3C 279. B. Glenn Piner, Stephen C. Unwin, Ann E. Wehrle, Alma C. Zook, C. Megan Urry, & Diane M. Gilmore. 588, 716 (2003)

Discovery of a New Radio Galaxy within the Error Box of the Unidentified Gamma-Ray Source 3EG J1735—1500. J. A. Combi, G. E. Romero, J. M. Paredes, D. F. Torres, & M. Ribó. 588, 731 (2003)

- A View through Faraday's Fog: Parsec-Scale Rotation Measures in Active Galactic Nuclei. R. T. Zavala & G. B. Taylor. 589, 126 (2003)
- VLB1 Polarimetry of 177 Sources from the Caltech–Jodrell Bank Flat-Spectrum Survey. L. K. Pollack, G. B. Taylor, & R. T. Zavala. 589, 733 (2003)
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- Testing of Inverse Compton Models for Active Galactic Nuclei with Gamma-Ray and Radio Observations. A. Lähteenmäki & E. Valtaoja. 590, 95 (2003)
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- Variability of Submillijansky Radio Sources. C. L. Carilli, R. J. Ivison, & D. A. Frail. 590, 192 (2003)

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- Radio Polarization of the Young High-Magnetic-Field Pulsar PSR J1119-6127. Fronefield Crawford & Nathan C. Keim. 590, 1020 (2003)

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 A. B. Peck, C. Henkel, J. S. Ulvestad, A. Brunthaler, H. Falcke, M. Elitzur, K. M. Menten, & J. F. Gallimore. 590, 149 (2003)
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- The Pleiades Reflection Nebula. I. Ultraviolet, Optical, and Far-Infrared Imaging Photometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 347 (2003)
- The Pleiades Reflection Nebula. II. Simple Model Constraints on Dust Properties and Scattering Geometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 362 (2003)
- Monte Carlo Study of Supernova Neutrino Spectra Formation. *Mathias Th. Keil, Georg G. Raffelt, & Hans-Thomas Janka.* 590, 971 (2003)

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- Role of Shocked Accretion Flows in Regulating the Quasi-Periodic Oscillation of Galactic Black Hole Candidates. *Tapas K. Das.* 588, L89 (2003)
- Optical and Far-Ultraviolet Spectroscopy of Knot D in the Vela Supernova Remnant. Ravi Sankrit, William P. Blair, & John C. Raymond. 589, 242 (2003)
- Solar Wind Speed and Temperature outside 10 AU and the Termination Shock. Y. C. Whang, L. F. Burlaga, Y.-M. Wang, & N. R. Sheeley, Jr. 589, 635 (2003)
- Small-Scale Structure of the SN 1006 Shock with Chandra Observations. Aya Bamba, Ryo Yamazaki, Masaru Ueno, & Katsuji Koyama. 589, 827 (2003)
- Particle Transport in Tangled Magnetic Fields and Fermi Acceleration at Relativistic Shocks. Martin Lemoine & Guy Pelletier. 589, L73 (2003)
- A Standard Kinetic Energy Reservoir in Gamma-Ray Burst Afterglows. E. Berger, S. R. Kulkarni, & D. A. Frail. 590, 379 (2003)
- The Physics of Supernova Blast Waves. I. Kinematics of DEM L71 in the Large Magellanic Cloud. Parviz Ghavamian, Cara E. Rakowski, John P. Hughes, & T. B. Williams. 590, 833 (2003)
- The Physics of Supernova Remnant Blast Waves. II. Electron-Ion Equilibration in DEM L71 in the Large Magellanic Cloud. Cara E. Rakowski, Parviz Ghavamian, & John P. Hughes. 590, 846 (2003)
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- Kuiper Belt Object Sizes and Distances from Occultation Observations. Asantha Cooray. 589, L97 (2003)
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The Initial Helium Content of Galactic Globular Cluster Stars from the R-Parameter: Comparison with the Cosmic Microwave Background Constraint. Santi Cassisi, Maurizio Salaris, & Alan W. Irwin. 588, 862 (2003)

- A Tale of Two Stars: The Extreme O7 Iaf+ Supergiant AV 83 and the OC7.5 III((f)) Star AV 69. D. John Hillier, T. Lanz, S. R. Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 588, 1039 (2003)
- Oxygen Abundance in the Template Halo Giant HD 122563. Beatriz Barbuy, Jorge Meléndez, Monique Spite, Francois Spite, Eric Depagne, Vanessa Hill, Roger Cayrel, Piercarlo Bonifacio, Augusto Damineli, & Carlos A.O. Torres. 588, 1072 (2003)
- Abundance Analysis of HE 2146–1247, a Star with Extremely Enhanced Neutron Capture Elements. Judith G. Cohen, Norbert Christlieb, Y.-Z. Qian, & G.J. Wasserburg. 588, 1082 (2003)
- Star Formation History of ω Centauri Imprinted in Elemental Abundance Patterns. *Takuji Tsujimoto & Toshikazy Shigeyama*. 590, 803 (2003)
- An Abundance Analysis of the New Carbon-Rich Proto-Planetary Nebula IRAS 06530-0213. Bruce J. Hrivnak & Bacham E. Reddy. 590, 1049 (2003)
- On Variations in the Peak Luminosity of Type Ia Supernovae. F. X. Timmes, Edward F. Brown, & J. W. Truran. 590, L83 (2003)
- The Abundance Evolution of Oxygen, Sodium, and Magnesium in Extremely Metal-Poor Intermediate-Mass Stars: Implications for the Self-Pollution Scenario in Globular Clusters. Pavel A. Denissenkov & Falk Herwig. 590, L99 (2003)

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- Asterospheric Magnetic Fields and Winds of Cool Stars. Carolus J. Schrijver, Marc L. DeRosa, & Alan M. Title. 590, 493 (2003)

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- Detections of OH toward the Extreme Carbon Star IRC +10216. K. E. Saavik Ford, David A. Neufeld, Paul F. Goldsmith, & Gary J. Melnick. 589, 430 (2003)
- Asymptotic Giant Branch and Supergiant Stellar Diameters in the Mid-Infrared. J. Weiner, D. D. S. Hale, & C. H. Townes. 589, 976 (2003)
- An Abundance Analysis of the New Carbon-Rich Proto-Planetary Nebula IRAS 06530-0213. Bruce J. Hrivnak & Bacham E. Reddy. 590, 1049 (2003)
- The Abundance Evolution of Oxygen, Sodium, and Magnesium in Extremely Metal-Poor Intermediate-Mass Stars: Implications for the Self-Pollution Scenario in Globular Clusters. Pavel A. Denissenkov & Falk Herwig. 590, L99 (2003)

STARS: ATMOSPHERES

- A Polarization Survey of SiO Maser Variability in Evolved Stars. J. Glenn, P. R. Jewell, R. Fourre, & L. Miaja. 588, 478 (2003)
- Detectibility of Mixed Unburnt C+O in Type Ia Supernova Spectra. E. Baron, Eric J. Lentz, & Peter H. Hauschildt. 588, L29 (2003)
- Transfer of Polarized Radiation in Strongly Magnetized Plasmas and Thermal Emission from Magnetars: Effect of Vacuum Polarization. *Dong Lai & Wynn C. G. Ho.* 588, 962 (2003)
- A Tale of Two Stars: The Extreme O7 Iaf+ Supergiant AV 83 and the OC7.5 III((f)) Star AV 69. D. John Hillier, T. Lanz, S. R. Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 588, 1039 (2003)
- Interferometry on Mira in the Mid-Infrared; Cyclic Variability of the Continuum Diameter and the Effect of Spectral Lines on Apparent Size. J. Weiner, D. D. S. Hale, & C. H. Townes. 588, 1064 (2003)
- The Stellar "Wind" of MWC 349A. M. A. Gordon. 589, 953 (2003)
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- Time-dependent Ionization in Dynamic Solar and Stellar Atmospheres. I. Methods. W. Rammacher & P. Ulmschneider. 589, 988 (2003)

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- X-Ray Studies of Two Neutron Stars in 47 Tucanae: Toward Constraints on the Equation of State. C. O. Heinke, J. E. Grindlay, D. A. Lloyd, & P. D. Edmonds, 588, 452 (2003)
- Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)
- A New Clue to the Transition Mechanism between Optical High and Low States of the Supersoft X-Ray Source RX J0513.9—6951, Implied from the Recurrent Nova CI Aquilae 2000 Outburst Model. Izumi Hachisu & Mariko Kato. 588, 1003 (2003)
- The Fe XXII I(11.92 Å)/I(11.77 Å) Density Diagnostic Applied to the Chandra High-Energy Transmission Grating Spectrum of EX Hydrae. Christopher W. Mauche, Duane A. Liedahl, & Kevin B. Fournier. 588, L101 (2003)
- Geodetic Precession and Timing of the Relativistic Binary Pulsars PSR B1534+12 and PSR 1913+16. Maciej Konacki, Alex Wolszczan, & Ingrid H. Stairs. 589, 495 (2003)
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- Gravitational Radiation from Gamma-Ray Burst Progenitors. Shiho Kobayashi & Peter Mészáros. 589, 861 (2003)
- A New Search Technique for Short Orbital Period Binary Pulsars. Scott M. Ransom, James M. Cordes, & Stephen S. Eikenberry, 589, 911 (2003)
- RX J0513.9–6951: The First Example of Accretion Wind Evolution, a Key Evolutionary Process to Type Ia Supernovae. *Izumi Hachisu & Mariko Kato*. 590, 445 (2003)
- The Complete Z-Diagram of LMC X-2. A. P. Smale, J. Homan, & E. Kuulkers. 590, 1035 (2003)
- Bowen Flourescence from the Companion Star in X1822-371. J. Casares, D. Steeghs, R. I. Hynes, P. A. Charles, & K. O'Brien. 590, 1041 (2003)

STARS: BINARIES: ECLIPSING

- X-Ray Studies of Two Neutron Stars in 47 Tucanae: Toward Constraints on the Equation of State. C. O. Heinke, J. E. Grindlay, D. A. Lloyd, & P. D. Edmonds. 588, 452 (2003)
- On the Selection of Photometric Planetary Transits. A. J. Drake. 589, 1020 (2003)
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- Theoretical Spectra and Atmospheres of Extrasolar Giant Planets. David Sudarsky, Adam Burrows, & Ivan Hubeny. 588, 1121 (2003)
- Hubble Space Telescope WFPC2 Imaging of the Disk and Jet of HV Tauri C. Karl R. Stapelfeldt, François Ménard, Alan M. Watson, John E. Krist, Catherine Dougados, Deborah L. Padgett, & Wolfgang Brandner. 589, 410 (2003)
- Near-Infrared Imaging of Circumstellar Disk around Herbig Ae star HD 150193 A. Misato Fukagawa, Motohide Tamura, Yoichi Itoh, Saeko S. Hayashi, & Yumiko Oasa. 590, L49 (2003)

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- Separating the X-Ray Emissions of UV Ceti A and B with Chandra. Marc Audard, Manuel Güdel, & Stephen L. Skinner. 589, 983 (2003)

STARS: BLUE STRAGGLERS

Blue Straggler Stars: A Direct Comparison of Star Counts and Population Ratios in Six Galactic Globular Clusters. Francesco R. Ferraro, Alison Sills, Robert T. Rood, Barbara Paltrinieri, & Roberto Buonanno. 588, 464 (2003)

STARS: CEPHEIDS

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Abundance Analysis of HE 2146–1247, a Star with Extremely Enhanced Neutron Capture Elements. Judith G. Cohen, Norbert Christlieb, Y.-Z. Qian, & G.J. Wasserburg. 588, 1082 (2003)

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Transition Region Emission from Very Low Mass Stars. Suzanne L. Hawley & Christopher M. Johns-Krull. 588, L109 (2003)

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CO Emission from Disks around AB Aurigae and HD 141569: Implications for Disk Structure and Planet Formation Timescales. Sean D. Brittain, Terrence W. Rettig, Theodore Simon, Craig Kulesa, Michael A. DiSanti, & Neil Dello Russo. 588, 535 (2003)

The Geometry of Resonant Signatures in Debris Disks with Planets. Marc J. Kuchner & Matthew J. Holman. 588, 1110 (2003)

R Cassiopeiae: Relative Strengths of SiO Masers at 43 and 86 GHz. R. B. Phillips, A. H. Straughn, S. S. Doeleman, & C. J. Lonsdale. 588, L105 (2003)

Magnetic Star-Disk Coupling in Classical T Tauri Systems. Manfred Küker, Thomas Henning, & Günther Rüdiger. 589, 397 (2003)

Hubble Space Telescope WFPC2 Imaging of the Disk and Jet of HV Tauri C. Karl R. Stapelfeldt, François Ménard, Alan M. Watson, John E. Krist, Catherine Dougados, Deborah L. Padgett, & Wolfgang Brandner. 589, 410 (2003)

Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae. Miwa Goto, W. Gaessler, Yutaka Hayano, Masanori Iye, Yukiko Kamata, Tomio Kanzawa, Naoto Kobayashi, Yosuke Minowa, D. J. Saint-Jacques, Hideki Takami, Naruhisa Takato, & Hiroshi Terada. 589, 419 (2003)

Gas in the Terrestrial Planet Region of Disks: CO Fundamental Emission from T Tauri Stars. Joan Najita, John S. Carr, & Robert D. Mathieu. 589, 931 (2003)

The Stellar "Wind" of MWC 349A. M. A. Gordon. 589, 953 (2003)

Intrinsic Properties of the Young Stellar Object SU Aurigae. L. E. DeWarf, J. F. Sepinsky, E. F. Guinan, I. Ribas, & I. Nadalin. 590, 357 (2003)

Modeling the Infrared Emission from the HR 4796A Disk. Aigen Li & J. I. Lunine. 590, 368 (2003)

NGC 7538S—a High-Mass Protostar with a Massive Rotating Disk. Goeran Sandell, Melvyn Wright, & James R. Forster. 590, L45 (2003)

Trapped Protostellar Winds and Their Breakout. Francis P. Wilkin & Steven W. Stahler. 590, 917 (2003)

An Abundance Analysis of the New Carbon-Rich Proto-Planetary Nebula IRAS 06530-0213. Bruce J. Hrivnak & Bacham E. Reddy. 590, 1049 (2003)

The First Detailed Look at a Brown Dwarf Disk. I. Pascucci, D. Apai, Th. Henning, & C. P. Dullemond. 590, L111 (2003)

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Chandra Observations of the Young Open Cluster NGC 2516. F. Damiani, E. Flaccomio, G. Micela, S. Sciortino, F.R. Harnden, Jr., S.S. Murray, S.J. Wolk, & R.D. Jeffries. 588, 1009 (2003)

Separating the X-Ray Emissions of UV Ceti A and B with Chandra. Marc Audard, Manuel Güdel, & Stephen L. Skinner. 589, 983 (2003)

Emission-Line Spectra of Ar IX-Ar XVI in the Soft X-Ray Region 20-50 Å.
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Far Ultraviolet Spectroscopic Explorer Snapshot Survey of O VI Variability in the Winds of 66 OB-Type Stars. N. Lehner, A. W. Fullerton, D. Massa, K. R. Sembach, & J. Zsargó. 589, 526 (2003)

Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martín A. Guerrero, & Margarita Rosado. 590, 306 (2003)

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The Remarkable Alternating Spectra of the Of?p Star HD 191612. Nolan R. Walborn, Ian D. Howarth, Artemio Herrero, & Daniel J. Lennon. 588, 1025 (2003)

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Near-Infrared Interferometric Measurements of Herbig Ae/Be Stars. J. A. Eisner, B. F. Lane, R. L. Akeson, L. A. Hillenbrand, & A. I. Sargent. 588, 360 (2003)

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The Initial Helium Content of Galactic Globular Cluster Stars from the R-Parameter: Comparison with the Cosmic Microwave Background Constraint. Santi Cassisi, Maurizio Salaris, & Alan W. Irwin. 588, 862 (2003)

Abundance Analysis of HE 2146–1247, a Star with Extremely Enhanced Neutron Capture Elements. Judith G. Cohen, Norbert Christlieb, Y.-Z. Qian, & G.J. Wasserburg. 588, 1082 (2003)

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Separating the X-Ray Emissions of UV Ceti A and B with Chandra. Marc Audard, Manuel Güdel, & Stephen L. Skinner. 589, 983 (2003)

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Magnetic Structure of a Dark Bok Globule. *Jacques P. Vallée, Jane S. Greaves,* & *Jason D. Fiege.* 588, 910 (2003)

Five Star-forming Cores in the Galactic Ring Survey: A Mid-Infrared Study. Kathleen E. Kraemer, James M. Jackson, Marc Kassis, Lynne K. Deutsch, Joseph L. Hora, Robert Simon, William F. Hoffmann, G. G. Fazio, Aditya Dayal, T. M. Bania, Dan P. Clemens, & Mark H. Heyer. 588, 918 (2003)

Was the Universe Reionized by Massive Metal-free Stars? J. Stuart B. Wyithe & Abraham Loeb. 588, L69 (2003)

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Miguel A. Trinidad, Salvador Curiel, Jorge Cantó, Paola D'Alessio, Luis
F. Rodríguez, José M. Torrelles, José F. Gómez, Nimesh Patel, & Paul T. P.

Ho. 589, 386 (2003)

Formation of the First Stars by Accretion. Kazuyuki Omukai & Francesco Palla. 589, 677 (2003)

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Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri. Tae-Soo Pyo, Naoto Kobayashi, Masahiko Hayashi, Hiroshi Terada, Miwa Goto, Hideki Takami, Naruhisa Takato, Wolfgang Gaessler, Tomonori Usuda, Takuya Yamashita, Alan T. Tokunaga, Yutaka Hayano, Yukiko Kamata, Masanori Iye, & Yosuke Minowa. 590, 340 (2003)

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- The Thermal Regulation of Gravitational Instabilities in Protoplanetary Disks. Brian K. Pickett, Annie C. Mejía, Richard H. Durisen, Patrick M. Cassen, Donald K. Berry, & Robert P. Link. 590, 1060 (2003)
- Locating the Launching Region of T Tauri Winds: The Case of DG Tauri. Jeffrey M. Anderson, Zhi-Yun Li, Ruben Krasnopolsky, & Roger D. Blandford. 590, L107 (2003)

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- Intrinsic Properties of the Young Stellar Object SU Aurigae. L. E. DeWarf, J. F. Sepinsky, E. F. Guinan, I. Ribas, & I. Nadalin. 590, 357 (2003)

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The Optical Gravitational Lensing Experiment: Is Interstellar Extinction toward the Galactic Center Anomalous? A. Udalski. 590, 284 (2003)

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- The Initial Helium Content of Galactic Globular Cluster Stars from the R-Parameter: Comparison with the Cosmic Microwave Background Constraint. Santi Cassisi, Maurizio Salaris, & Alan W. Irwin. 588, 862 (2003)

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Hard X-Ray Flares Preceding Soft X-Ray Outbursts in Aquila X-1: A Link between Neutron Star and Black Hole Transitions. Wenfei Yu, Marc Klein-Wolt, Rob Fender, & Michiel van der Klis. 589, L33 (2003)

Constellation Name: CI Aquilae

A New Clue to the Transition Mechanism between Optical High and Low States of the Supersoft X-Ray Source RX J0513.9-6951, Implied from the Recurrent Nova CI Aquilae 2000 Outburst Model. *Izumi Hachisu & Mariko Kato.* 588, 1003 (2003)

Constellation Name: AB Aurigae

- Near-Infrared Interferometric Measurements of Herbig Ae/Be Stars. J. A. Eisner, B. F. Lane, R. L. Akeson, L. A. Hillenbrand, & A. I. Sargent. 588, 360 (2003)
- Intrinsic Properties of the Young Stellar Object SU Aurigae. L. E. DeWarf, J. F. Sepinsky, E. F. Guinan, I. Ribas, & I. Nadalin. 590, 357 (2003)

Constellation Name: SU Aurigae

Intrinsic Properties of the Young Stellar Object SU Aurigae. L. E. DeWarf, J. F. Sepinsky, E. F. Guinan, I. Ribas, & I. Nadalin. 590, 357 (2003)

Constellation Name: τ Ceti

The Geometry of Resonant Signatures in Debris Disks with Planets. Marc J. Kuchner & Matthew J. Holman. 588, 1110 (2003)

Constellation Name: o Ceti

Interferometry on Mira in the Mid-Infrared; Cyclic Variability of the Continuum Diameter and the Effect of Spectral Lines on Apparent Size. J. Weiner, D. D. S. Hale, & C. H. Townes. 588, 1064 (2003)

Constellation Name: UV Ceti

Separating the X-Ray Emissions of UV Ceti A and B with Chandra. Marc Audard, Manuel Güdel, & Stephen L. Skinner. 589, 983 (2003)

Constellation Name: Cygnus X-3

Extended Emission from Cygnus X-3 Detected with Chandra. W. A. Heindl, J. A. Tomsick, R. Wijnands, & D. M. Smith. 588, L97 (2003)

Constellation Name: χ Cygni

Asymptotic Giant Branch and Supergiant Stellar Diameters in the Mid-Infrared. J. Weiner, D. D. S. Hale, & C. H. Townes. 589, 976 (2003)

Constellation Name: V1685 Cygni

Near-Infrared Interferometric Measurements of Herbig Ae/Be Stars. J. A. Eisner, B. F. Lane, R. L. Akeson, L. A. Hillenbrand, & A. I. Sargent. 588, 360 (2003)

Constellation Name: ∈ Eridani

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Constellation Name: α Herculis

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Constellation Name: R Leonis

Asymptotic Giant Branch and Supergiant Stellar Diameters in the Mid-Infrared. J. Weiner, D. D. S. Hale, & C. H. Townes. 589, 976 (2003)

Constellation Name: a Lyrae

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Constellation Name: V838 Monocerotis

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Constellation Name: VV Serpentis

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Constellation Name: DG Tauri

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Constellation Name: HV Tauri

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Constellation Name: RT Virginis

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Bright Star Number: HR 166

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Bright Star Number: HR 4796A

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Henry Draper Number: HD 3651

A Sub-Saturn Mass Planet Orbiting HD 3651. Debra A. Fischer, R. Paul Butler, Geoffrey W. Marcy, Steven S. Vogt, & Gregory W. Henry. 590, 1081 (2003)

Henry Draper Number: HD 5980

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Henry Draper Number: HD 122563

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Henry Draper Number: HD 209458

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Alphanumeric: AS 442

Near-Infrared Interferometric Measurements of Herbig Ae/Be Stars. J. A. Eisner, B. F. Lane, R. L. Akeson, L. A. Hillenbrand, & A. I. Sargent. 588, 360 (2003)

Alphanumeric: AV 69

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Alphanumeric: AV 83

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Alphanumeric: CFHT-BD-Tau 4

The First Detailed Look at a Brown Dwarf Disk. I. Pascucci, D. Apai, Th. Henning, & C. P. Dullemond. 590, L111 (2003)

Alphanumeric: COM J1740-5340

The Complex Hα Line Profile of the Bright Companion to PSR J1740–5340 in NGC 6397. E. Sabbi, R. Gratton, F. R. Ferraro, A. Bragaglia, A. Possenti, N. D'Amico, & F. Camilo. 589, L41 (2003)

Alphanumeric: EXO 0748-676

Discrete X-Ray Signatures of a Photoionized Plasma above the Accretion Disk of the Neutron Star EXO 0748–676. M. A. Jimenez-Garate, N. S. Schulz, & H. L. Marshall. 590, 432 (2003)

Alphanumeric: G29-38

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Alphanumeric: GJ 876

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Alphanumeric: GRS 1915+105

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Alphanumeric: IRAS 04302+2247

The Circumstellar Disk of the Butterfly Star in Taurus. Sebastian Wolf, Deborah L. Padgett, & Karl R. Stapelfeldt. 588, 373 (2003)

Alphanumeric: IRAS 06530-0213

An Abundance Analysis of the New Carbon-Rich Proto-Planetary Nebula IRAS 06530-0213. Bruce J. Hrivnak & Bacham E. Reddy. 590, 1049 (2003)

Alphanumeric: IRAS 22272+5435

Spatially Resolved 3 Micron Spectroscopy of IRAS 22272+5435: Formation and Evolution of Aliphatic Hydrocarbon Dust in Proto-Planetary Nebulae. Miwa Goto, W. Gaessler, Yutaka Hayano, Masanori Iye, Yukiko Kamata, Tomio Kanzawa, Naoto Kobayashi, Yosuke Minowa, D. J. Saint-Jacques, Hideki Takami, Naruhisa Takato, & Hiroshi Terada. 589, 419 (2003)

Alphanumeric: IRC +10216

Detections of OH toward the Extreme Carbon Star IRC +10216. K. E. Saavik Ford, David A. Neufeld, Paul F. Goldsmith, & Gary J. Melnick. 589, 430 (2003)

Alphanumeric: LMC X-2

The Complete Z-Diagram of LMC X-2. A. P. Smale, J. Homan, & E. Kuulkers. 590, 1035 (2003)

Alphanumeric: MWC 349A

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Alphanumeric: MWC 1080

Near-Infrared Interferometric Measurements of Herbig Ae/Be Stars. J. A. Eisner, B. F. Lane, R. L. Akeson, L. A. Hillenbrand, & A. I. Sargent. 588, 360 (2003)

Alphanumeric: PSR B0540-69

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Alphanumeric: RX J0513.9-6951

A New Clue to the Transition Mechanism between Optical High and Low States of the Supersoft X-Ray Source RX J0513.9—6951, Implied from the Recurrent Nova CI Aquilae 2000 Outburst Model. *Izumi Hachisu & Mariko Kato.* 588, 1003 (2003)

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Alphanumeric: SAX J1808.4-3658

An XMM-Newton Observation during the 2000 Outburst of SAX J1808.4—3658. Rudy Wijands. 588, 425 (2003)

Alphanumeric: 4U 1728-34

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Alphanumeric: VB 8

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Alphanumeric: VB 10

Transition Region Emission from Very Low Mass Stars. Suzanne L. Hawley & Christopher M. Johns-Krull. 588, L109 (2003)

Alphanumeric: X1822-371

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- X-Ray Studies of Two Neutron Stars in 47 Tucanae: Toward Constraints on the Equation of State. C. O. Heinke, J. E. Grindlay, D. A. Lloyd, & P. D. Edmonds. 588, 452 (2003)
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- Coupling between Periodic and Aperiodic Variability in SAX J1808.4—3658.
 M. T. Menna, L. Burderi, L. Stella, N. Robba, & M. van der Klis. 589, 503 (2003)
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- The Infrared Counterpart to the Anomalous X-Ray Pulsar 1RXS J170849-400910. G. L. Israel, S. Covino, R. Perna, R. Mignani, L. Stella, S. Campana, G. Marconi, G. Bono, S. Mereghetti, C. Motch, I. Negueruela, T. Oosterbroek, & L. Angelini. 589, L93 (2003)
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- A Chandra X-Ray Study of the Dense Globular Cluster Terzan 5. C. O. Heinke, P. D. Edmonds, J. E. Grindlay, D. A. Lloyd, H. N. Cohn, & P. M. Lugger. 590, 809 (2003)
- Eddington-limited X-Ray Bursts as Distance Indicators. I. Systematic Trends and Spherical Symmetry in Bursts from 4U 1728–34. Duncan K. Galloway, Dimitrios Psaltis, Deepto Chakrabarty, & Michael P. Muno. 590, 999 (2003)
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- Radio Polarization of the Young High-Magnetic-Field Pulsar PSR J1119—6127.
 Fronefield Crawford & Nathan C. Keim. 590, 1020 (2003)
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Marvel, Philip J. Diamond, Tetsuo Sasao, Makoto Miyoshi, Makoto Inoue, Victor Migenes, & Yasuhiro Murata. 590, 460 (2003)

STARS: PLANETARY SYSTEMS

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- Determining the Inclination of the Rotation Axis of a Sun-like Star. L. Gizon & S. K. Solanki. 589, 1009 (2003)
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 Brian K. Pickett, Annie C. Mejía, Richard H. Durisen, Patrick M. Cassen,
 Donald K. Berry, & Robert P. Link. 590, 1060 (2003)

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Near-Infrared Imaging of Circumstellar Disk around Herbig Ae star HD 150193 A. Misato Fukagawa, Motohide Tamura, Yoichi Itoh, Saeko S. Hayashi, & Yumiko Oasa. 590, L49 (2003)

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- Abundance Analysis of HE 2146–1247, a Star with Extremely Enhanced Neutron Capture Elements. Judith G. Cohen, Norbert Christlieb, Y.-Z. Qian, & G.J. Wasserburg, 588, 1082 (2003)
- Stellar Sources for Heavy r-Process Nuclei. Y.-Z. Qian & G. J. Wasserburg. 588, 1099 (2003)
- Kinematics of Tidal Debris from ω Centauri's Progenitor Galaxy. *Arihiro Mizutani, Masashi Chiba, & Tsuyoshi Sakamoto.* 589, L89 (2003)

STARS: PRE-MAIN-SEQUENCE

- Near-Infrared Interferometric Measurements of Herbig Ae/Be Stars. J. A. Eisner, B. F. Lane, R. L. Akeson, L. A. Hillenbrand, & A. I. Sargent. 588, 360 (2003)
- The Circumstellar Disk of the Butterfly Star in Taurus. Sebastian Wolf, Deborah L. Padgett, & Karl R. Stapelfeldt. 588, 373 (2003)
- The First Detection of Spatially Resolved Mid-Infrared Scattered Light from a Protoplanetary Disk. C. McCabe, G. Duchêne, & A. M. Ghez. 588, L113 (2003)
- Magnetic Star-Disk Coupling in Classical T Tauri Systems. Manfred Küker, Thomas Henning, & Günther Rüdiger. 589, 397 (2003)
- Hubble Space Telescope WFPC2 Imaging of the Disk and Jet of HV Tauri C. Karl R. Stapelfeldt, François Ménard, Alan M. Watson, John E. Krist, Catherine Dougados, Deborah L. Padgett, & Wolfgang Brandner. 589, 410 (2003)
- Adaptive Optics Spectroscopy of the [Fe II] Outflow from DG Tauri. Tae-Soo Pyo, Naoto Kobayashi, Masahiko Hayashi, Hiroshi Terada, Miwa Goto, Hideki Takami, Naruhisa Takato, Wolfgang Gaessler, Tomonori Usuda, Takuya Yamashita, Alan T. Tokunaga, Yutaka Hayano, Yukiko Kamata, Masanori Iye, & Yosuke Minowa. 590, 340 (2003)
- New Low-Mass Members of the Taurus Star-forming Region. K. L. Luhman, Cesar Briceno, John R. Stauffer, Lee Hartmann, D. Barrado y Navascues, & Nelson Caldwell. 590, 348 (2003)
- Intrinsic Properties of the Young Stellar Object SU Aurigae. L. E. DeWarf, J. F. Sepinsky, E. F. Guinan, I. Ribas, & I. Nadalin. 590, 357 (2003)
- NGC 7538S—a High-Mass Protostar with a Massive Rotating Disk. Goeran Sandell, Melvyn Wright, & James R. Forster. 590, L45 (2003)
- Near-Infrared Imaging of Circumstellar Disk around Herbig Ae star HD 150193 A. Misato Fukagawa, Motohide Tamura, Yoichi Itoh, Saeko S. Hayashi, & Yumiko Oasa. 590, L49 (2003)
- Trapped Protostellar Winds and Their Breakout. Francis P. Wilkin & Steven W. Stahler. 590, 917 (2003)
- Locating the Launching Region of T Tauri Winds: The Case of DG Tauri. Jeffrey M. Anderson, Zhi-Yun Li, Ruben Krasnopolsky, & Roger D. Blandford. 590, L107 (2003)

STARS: PULSARS: GENERAL

- Extended Acceleration in Slot Gaps and Pulsar High-Energy Emission. Alex G. Muslimov & Alice K. Harding. 588, 430 (2003)
- The Pulsar Wind Nebula in G11.2—0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)
- A Major Soft Gamma Repeater–like Outburst and Rotation Glitch in the No-longer-so-anomalous X-Ray Pulsar 1E 2259+586. V. M. Kaspi, F. P. Gavrill, P. M. Woods, J. B. Jensen, M. S. E. Roberts, & D. Chakrabarty. 588, L93 (2003)
- Global Asymptotic Solutions for Magnetohydrodynamic Jets and Winds. I. Okamoto. 589, 671 (2003)
- A Search for Pulsars in Quiescent Soft X-Ray Transients. I. M. Burgay, L. Burderi, A. Possenti, N. D'Amico, R. N. Manchester, A. G. Lyne, F. Camilo, & S. Campana. 589, 902 (2003)
- A New Search Technique for Short Orbital Period Binary Pulsars. Scott M. Ransom, James M. Cordes, & Stephen S. Eikenberry. 589, 911 (2003)
- The Infrared Counterpart to the Anomalous X-Ray Pulsar IRXS J170849—400910. G. L. Israel, S. Covino, R. Perna, R. Mignani, L. Stella, S. Campana, G. Marconi, G. Bono, S. Mereghetti, C. Motch, I. Negueruela, T. Oosterbroek, & L. Angelini. 589, L93 (2003)

- Radiation of Neutron Stars Produced by Superfluid Core. Anatoly A. Svidzinsky, 590, 386 (2003)
- Toward an Empirical Theory of Pulsar Emission. VIII. Subbeam Circulation and the Polarization-Modal Structure of Conal Beams. Joanna M. Rankin & R. Ramachandran, 590, 411 (2003)
- X-Ray Pulses from Accretion Columns: Contributions to the Energy Dependence of the Pulse Shape. U. Kraus, C. Zahn, C. Weth, & H. Ruder. 590, 424 (2003)
- The Transition between Nonorthogonal Polarization Modes in PSR B2016+28 at 1404 MHz. Mark M. McKinnon. 590, 1026 (2003)

STARS: PULSARS: INDIVIDUAL

Alphanumeric: AX J1811.5-1926

The Pulsar Wind Nebula in G11.2-0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)

Alphanumeric: B1534+12

Geodetic Precession and Timing of the Relativistic Binary Pulsars PSR B1534+12 and PSR 1913+16. Maciej Konacki, Alex Wolszczan, & Ingrid H. Stairs. 589, 495 (2003)

Alphanumeric: B1913+16

Geodetic Precession and Timing of the Relativistic Binary Pulsars PSR B1534+12 and PSR 1913+16. Maciej Konacki, Alex Wolszczan, & Ingrid H. Stairs, 589, 495 (2003)

Alphanumeric: 1E 2259+586

A Major Soft Gamma Repeater-like Outburst and Rotation Glitch in the No-longer-so-anomalous X-Ray Pulsar 1E 2259+586. V. M. Kaspi, F. P. Gavriil, P. M. Woods, J. B. Jensen, M. S. E. Roberts, & D. Chakrabarty. 588, L93 (2003)

Alphanumeric: PSR 1828-11

The Crustal Rigidity of a Neutron Star, and Implications for PSR 1828-11 and Other Precession Candidates. Curt Cutler, Greg Ushomirsky, & Bennett Link. 588, 975 (2003)

Alphanumeric: PSR 1929+10

The Transition between Nonorthogonal Polarization Modes in PSR B2016+28 at 1404 MHz. Mark M. McKinnon. 590, 1026 (2003)

Alphanumeric: PSR B0950+08

The Transition between Nonorthogonal Polarization Modes in PSR B2016+28 at 1404 MHz. Mark M. McKinnon. 590, 1026 (2003)

Alphanumeric: PSR B1823-13

XMM-Newton Observations of PSR B1823-13: An Asymmetric Synchrotron Nebula around a Vela-like Pulsar. B. M. Gaensler, N. S. Schulz, V. M. Kaspi, M. J. Pivovaroff, & W. E. Becker. 588, 441 (2003)

Alphanumeric: PSR B2020+28

The Transition between Nonorthogonal Polarization Modes in PSR B2016+28 at 1404 MHz. Mark M. McKinnon. 590, 1026 (2003)

Alphanumeric: PSR J1119-6127

Radio Polarization of the Young High-Magnetic-Field Pulsar PSR J1119--6127. Fronefield Crawford & Nathan C. Keim. 590, 1020 (2003)

Alphanumeric: PSR J1740+5340

The Complex Hα Line Profile of the Bright Companion to PSR J1740-5340 in NGC 6397. E. Sabbi, R. Gratton, F. R. Ferraro, A. Bragaglia, A. Possenti, N. D'Amico, & F. Camilo. 589, L41 (2003)

Alphanumeric: RX J0720-3125

The Nearby Neutron Star RX J0720.4-3125 from Radio to X-Rays. D. L. Kaplan, M. H. van Kerkwijk, H. L. Marshall, B. A. Jacoby, S. R. Kulkarni, & D. A. Frail. 590, 1008 (2003)

Alphanumeric: RX J1605.3+3249

The Optical Counterpart of the Isolated Neutron Star RX J1605.3+3249. D. L. Kaplan, S. R. Kulkarni, & M. H. van Kerkwijk. 588, L33 (2003)

Alphanumeric: 1RXS J170849-400910

Infrared Counterpart to the Anomalous X-Ray IRXS J170849-400910. G. L. Israel, S. Covino, R. Perna, R. Mignani, L. Stella, S. Campana, G. Marconi, G. Bono, S. Mereghetti, C. Motch, I. Negueruela, T. Oosterbroek, & L. Angelini. 589, L93 (2003)

Alphanumeric: SAX J1808.4-3658

Coupling between Periodic and Aperiodic Variability in SAX J1808.4-3658. M. T. Menna, L. Burderi, L. Stella, N. Robba, & M. van der Klis. 589, 503 (2003)

STARS: ROTATION

The Crustal Rigidity of a Neutron Star, and Implications for PSR 1828-11 and Other Precession Candidates. Curt Cutler, Greg Ushomirsky, & Bennett Link. 588, 975 (2003).

High-Resolution Spectroscopy of the Pulsating White Dwarf G29-38. Susan E. Thompson, J. C. Clemens, M. H. van Kerkwijk, & D. Koester. 589, 921

Determining the Inclination of the Rotation Axis of a Sun-like Star. L. Gizon & S. K. Solanki. 589, 1009 (2003)

STARS: STATISTICS

A Possible Correlation between Mass Ratio and Period Ration in Multiple Planetary Systems. Tsevi Mazeh & Shay Zucker. 590, L115 (2003)

STARS: SUPERNOVAE: GENERAL

Detectibility of Mixed Unburnt C+O in Type Ia Supernova Spectra. E. Baron, Eric J. Lentz, & Peter H. Hauschildt. 588, L29 (2003)

Cosmological Acceleration through Transition to Constant Scalar Curvature. Leonard Parker, William Komp, & Daniel A. T. Vanzella, 588, 663 (2003) On the Small-Scale Stability of Thermonuclear Flames in Type Ia Supernovae.

F. K. Roepke, J. C. Niemeyer, & W. Hillenbrandt. 588, 952 (2003) Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field-North with the Advanced Camera for Surveys. John P. Blakeslee, Zlatan I. Tsvetanov, Adam G. Riess, Holland C. Ford, Garth D. Illingworth, Daniel Magee, John L. Tonry, Narciso Benítez, Mark Clampin, George F. Hartig, Gerhardt R. Meurer, Marco Sirianni, David R. Ardila, Frank Bartko, Rychard Bouwens, Tom Broadhurst, Nicholas Cross, P. D. Feldman, Marijn Franx, David A. Golimowski, Caryl Gronwall, Randy Kimble, John Krist, André R. Martel, Felipe Menanteau, George Miley, Marc Postman, Piero Rosati, William Sparks, L.-G. Strolger, Hien D. Tran, Richard L. White, & Wei Zheng. 589, 693 (2003)

Magnetars in the Metagalaxy: An Origin for Ultra-High-Energy Cosmic Rays in the Nearby Universe. Jonathan Arons. 589, 871 (2003)

Wind-Interaction Models for the Early Afterglows of Gamma-Ray Bursts: The Case of GRB 021004. Zhi-Yun Li & Roger A. Chevalier. 589, L69 (2003)

Supernova Enrichment of Dwarf Spheroidal Galaxies. P. Chris Fragile, Stephen D. Murray, Peter Anninos, & Douglas N. C. Lin. 590, 778 (2003)

Star Formation History of ω Centauri Imprinted in Elemental Abundance Patterns. Takuji Tsujimoto & Toshikazy Shigeyama. 590, 803 (2003) The Superbubble Origin of ²²Ne in Cosmic Rays. J. C. Higdon & R. E.

Lingenfelter. 590, 822 (2003)

Multicolor Light Curves of Type Ia Supernovae on the Color-Magnitude Diagram: A Novel Step toward More Precise Distance and Extinction Estimates. Lifan Wang, Gerson Goldhaber, Greg Aldering, & Saul Perlmutter. 590, 944 (2003)

Monte Carlo Study of Supernova Neutrino Spectra Formation. Mathias Th. Keil, Georg G. Raffelt, & Hans-Thomas Janka. 590, 971 (2003)

Variations in the Peak Luminosity of Type Ia Supernovae. F. X. Timmes, Edward F. Brown, & J. W. Truran. 590, L83 (2003)

STARS: SUPERNOVAE: INDIVIDUAL

Alphanumeric: G11.2-0.3

The Pulsar Wind Nebula in G11.2-0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)

Alphanumeric: SN 2002dc

Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field-North with the Advanced Camera for Surveys. John P. Blakeslee, Zlatan I. Tsvetanov, Adam G. Riess, Holland C. Ford, Garth D. Illingworth, Daniel Magee, John L. Tonry, Narciso Benítez, Mark Clampin, George F. Hartig, Gerhardt R. Meurer, Marco Sirianni, David R. Ardila, Frank Bartko, Rychard Bouwens, Tom Broadhurst, Nicholas Cross, P. D. Feldman, Marijn Franx, David A. Golimowski, Caryl Gronwall, Randy Kimble, John Krist, André R. Martel, Felipe Menanteau, George Miley, Marc Postman, Piero Rosati, William Sparks, L.-G. Strolger, Hien D. Tran, Richard L. White, & Wei Zheng. 589, 693 (2003)

Alphanumeric: SN 2002dd

Discovery of Two Distant Type Ia Supernovae in the Hubble Deep Field-North with the Advanced Camera for Surveys. John P. Blakeslee, Zlatan I. Tsvetanov, Adam G. Riess, Holland C. Ford, Garth D. Illingworth, Daniel Magee, John L. Tonry, Narciso Benítez, Mark Clampin, George F. Hartig, Gerhardt R. Meurer, Marco Sirianni, David R. Ardila, Frank Bartko, Rychard Bouwens, Tom Broadhurst, Nicholas Cross, P. D. Feldman, Marijn Franx, David A. Golimowski, Caryl Gronwall, Randy Kimble,

John Krist, André R. Martel, Felipe Menanteau, George Miley, Marc Postman, Piero Rosati, William Sparks, L.-G. Strolger, Hien D. Tran, Richard L. White, & Wei Zheng. 589, 693 (2003)

STARS: VARIABLES: OTHER

- A Polarization Survey of SiO Maser Variability in Evolved Stars. J. Glenn, P. R. Jewell, R. Fourre, & L. Miaja. 588, 478 (2003)
- Spectroscopic and Spectropolarimetric Observations of V838 Monocerotis. John P. Wisniewski, Nancy D. Morrison, Karen S. Bjorkman, Anatoly S. Miroshnichenko, Amanda C. Gault, Jennifer L. Hoffman, Marilyn R. Meade, & Jason M. Nett. 588, 486 (2003)
- The Remarkable Alternating Spectra of the Of?p Star HD 191612. Nolan R. Walborn, Ian D. Howarth, Artemio Herrero, & Daniel J. Lennon. 588, 1025 (2003)
- RR Lyrae and Short-Period Variable Stars in the Dwarf Irregular Galaxy NGC 6822. Gisella Clementini, Enrico V. Held, Lara Baldacci, & Luca Rizzi. 588, L85 (2003)
- Magnetic Star-Disk Coupling in Classical T Tauri Systems. Manfred Küker, Thomas Henning, & Günther Rüdiger. 589, 397 (2003)
- High-Resolution Spectroscopy of the Pulsating White Dwarf G29-38. Susan E. Thompson, J. C. Clemens, M. H. van Kerkwijk, & D. Koester. 589, 921 (2003)
- Gas in the Terrestrial Planet Region of Disks: CO Fundamental Emission from T Tauri Stars. Joan Najita, John S. Carr, & Robert D. Mathieu. 589, 931 (2003)
- Turbulent Pressure in the Envelopes of Yellow Hypergiants and Luminous Blue Variables. *Richard B. Stothers.* 589, 960 (2003)
- The Three-dimensional Kinematics of Water Masers around the Semiregular Variable RT Virginis. Hiroshi Imai, Katsunori M. Shibata, Kevin B. Marvel, Philip J. Diamond, Tetsuo Sasao, Makoto Miyoshi, Makoto Inoue, Victor Migenes, & Yasuhiro Murata. 590, 460 (2003)

STARS: WHITE DWARFS

- White Dwarf Sequences in Dense Star Clusters. Jarrod R. Hurley & Michael M. Shara. 589, 179 (2003)
- High-Resolution Spectroscopy of the Pulsating White Dwarf G29-38. Susan E. Thompson, J. C. Clemens, M. H. van Kerkwijk, & D. Koester. 589, 921 (2003)
- A Luminous Recurrent Supersoft X-Ray Source in NGC 300. Albert Kong & R. DiStefano. 590, L13 (2003)

STARS: WINDS

The Statistical Sobolev-Rosseland Mean and the Effects of Frequency Redistribution on Wolf-Rayet Wind Driving. A. J. Onifer & K. G. Gayley. 590, 473 (2003)

STARS: WINDS, OUTFLOWS

- A New Clue to the Transition Mechanism between Optical High and Low States of the Supersoft X-Ray Source RX J0513.9—6951, Implied from the Recurrent Nova CI Aquilae 2000 Outburst Model. *Izumi Hachisu & Mariko Kato.* 588, 1003 (2003)
- Abundance Anomalies in the X-Ray Spectra of Planetary Nebulae NGC 7027 and BD +30° 3639. Holly L. Maness, Saega D. Vrtilek, Joel H. Kastner, & Noam Soker. 589, 439 (2003)
- Far Ultraviolet Spectroscopic Explorer Snapshot Survey of O vi Variability in the Winds of 66 OB-Type Stars. N. Lehner, A. W. Fullerton, D. Massa, K. R. Sembach, & J. Zsargó, 589, 526 (2003)
- Global Asymptotic Solutions for Magnetohydrodynamic Jets and Winds. I. Okamoto. 589, 671 (2003)

The Stellar "Wind" of MWC 349A. M. A. Gordon. 589, 953 (2003)

- Diffuse X-Ray Emission from the Quiescent Superbubble M17, the Omega Nebula. Bryan C. Dunne, You-Hua Chu, C.-H. Rosie Chen, Justin D. Lowry, Leisa Townsley, Robert A. Gruendl, Martin A. Guerrero, & Margarita Rosado. 590, 306 (2003)
- RX J0513.9-6951: The First Example of Accretion Wind Evolution, a Key Evolutionary Process to Type Ia Supernovae. *Izumi Hachisu & Mariko Kato*. 590, 445 (2003)
- Asterospheric Magnetic Fields and Winds of Cool Stars. Carolus J. Schrijver, Marc L. DeRosa, & Alan M. Title. 590, 493 (2003)

STARS: WOLF-RAYET

GRB 021004: A Massive Progenitor Star Surrounded by Shells. Bradley E. Schaefer, C. L. Gerardy, P. Höflich, A. Panaitescu, R. Quimby, J. Mader, G. J. Hill, P. Kumar, J. C. Wheeler, M. Eracleous, S. Sigurdsson, P. Mészáros, B. Zhang, L. Wang, F. V. Hessman, & V. Petrosian. 588, 387 (2003)

- Turbulent Pressure in the Envelopes of Yellow Hypergiants and Luminous Blue Variables. *Richard B. Stothers*. 589, 960 (2003)
- The Statistical Sobolev-Rosseland Mean and the Effects of Frequency Redistribution on Wolf-Rayet Wind Driving. A. J. Onifer & K. G. Gayley. 590, 473 (2003)
- Discovery of Highly Dynamic Matter Enhancements along the Polar Axis and Equatorial Plane in the Luminous Blue Variable Binary HD 5980. A. Villar-Sbaffi, Anthony F. J. Moffat, & N. St-Louis. 590, 483 (2003)
- The Superbubble Origin of ²²Ne in Cosmic Rays. *J. C. Higdon & R. E. Lingenfelter.* 590, 822 (2003)

STELLAR DYNAMICS

- A Dynamical Fossil in the Ursa Minor Dwarf Spheroidal Galaxy. Jan T. Kleyna, Mark I. Wilkinson, Gerard Gilmore, & N. Wyn Evans. 588, L21 (2003)
- White Dwarf Sequences in Dense Star Clusters. Jarrod R. Hurley & Michael M. Shara. 589, 179 (2003)
- Corotation, Stellar Wandering, and Fine Structure of the Galactic Abundance Pattern. J. R. D. Lépine, I. A. Acharova, & Yu. N. Mishurov. 589, 210 (2003)
- A Dynamical Model for the Globular Cluster G1. Holger Baumgardt, Junichiro Makino, Piet Hut, Steve McMillan, & Simon Portegies Zwart. 589, L25 (2003)
- Dynamical Evolution of Galaxies in Clusters. Oleg Y. Gnedin. 589, 752 (2003)Draco: A Failure of the Tidal Model. Ralf S. Klessen, Eva K. Grebel, & Daniel Harbeck. 589, 798 (2003)
- Orbital Inspiral into a Massive Black Hole in a Galactic Center. *Tal Alexander & Clovis Hopman*. 590, L29 (2003)

SUBMILLIMETER

- The Bivariate Luminosity-Color Distribution of *IRAS* Galaxies and Implications for the High-Redshift Universe. *S. C. Chapman, G. Helou, G. F. Lewis, & D. A. Dale.* 588, 186 (2003)
- Photometric Redshift Using the Far-Infrared Spectral Energy Distribution. T. Wiklind. 588, 736 (2003)
- Distribution of the C 1 Emission in the ρ Ophiuchi Dark Cloud. Kazuhisa Kamegai, Masafumi Ikeda, Hiroyuki Maezawa, Tetsuya Ito, Mitsuhiro Iwata, Takeshi Sakai, Tomoharu Oka, Satoshi Yamamoto, Yutaro Sekimoto, Ken'ichi Tatematsu, Takashi Noguchi, Shuji Saito, Hideo Fujiwara, Hiroyuki Ozeki, Junji Inatani, & Masatoshi Ohishi. 589, 378 (2003)
- NGC 7538S—a High-Mass Protostar with a Massive Rotating Disk. Goeran Sandell, Melvyn Wright, & James R. Forster. 590, L45 (2003)
- Submillimeter Wave Astronomy Satellite Mapping Observations of Water Vapor around Sagittarius B2. David A. Neufeld, Edwin A. Bergin, Gary J. Melnick, & Paul F. Goldsmith. 590, 882 (2003)

SUN: ABUNDANCES

- An Explanation for Large Enhancements of Nitrogen Relative to Carbon and Oxygen in Solar ³He-rich Events. *T. X. Zhang & J. X. Wang.* 588, L57 (2003)
- Solar Flare Abundances of Potassium, Argon, and Sulphur. K. J. H. Phillips, J. Sylwester, B. Sylwester, & E. Landi. 589, L113 (2003)

SUN: ACTIVITY

- Solar and Heliospheric Observatory/Coronal Diagnostic Spectrograph and Ground-based Observations of a Two-Ribbon Flare: Spatially Resolved Signatures of Chromospheric Evaporation. L. Teriaca. A. Falchi, G. Cauzzi, R. Falciani, L. A. Smaldone, & V. Andretta. 588, 596 (2003)
- Evidence for a Suprathermal Seed Population of Heavy Ions Accelerated by Interplanetary Shocks near 1 AU. M. I. Desai, G. M. Mason, J. R. Dwyer, J. E. Mazur, R. E. Gold, S. M. Krimigis, C. W. Smith, & R. M. Skoug. 588, 1149 (2003)
- Comparison of Total Solar Irradiance with NASA/National Solar Observatory Spectromagnetograph Data in Solar Cycles 22 and 23. Harrison P. Jones, Detrick D. Branston, Patricia B. Jones, & Miruna D. Popescu. 589, 658 (2003)
- Evidence That a Deep Meridional Flow Sets the Sunspot Cycle Period. David H. Hathaway, Dibyendu Nandy, Robert M. Wilson, & Edwin J. Reichmann. 589, 665 (2003)
- Variation of X-Ray Bright Point Number over the Solar Activity Cycle. H. Hara & K. Nakakubo-Marimoto. 589, 1062 (2003)
- Constraints on Coronal Mass Ejection Dynamics from Simultaneous Radio and White-Light Observations. M. J. Reiner, A. Vourlidas, O. C. St. Cyr, J. T. Burkepile, R. A. Howard, M. L. Kaiser, N. P. Prestage, & J.-L. Bouweret, 590, 533 (2003)

- Does the Sun Shrink with Increasing Magnetic Activity? H. M. Antia. 590, 567 (2003)
- The Contribution of Faculae and Network to Long-Term Changes in the Total Solar Irradiance. Stephan R. Walton, Dora G. Preminger, & Gary A. Chapman. 590, 1088 (2003)
- Spatial and Temporal Properties of Hot and Cool Coronal Loops. Shin'ichi Nagata, Hirohisa Hara, Ryouhei Kano, Ken Kobayashi, Taro Sakao, Toshifumi Shimizy, Saku Tsuneta, Tsuyoshi Yoshida, & Joseph B. Gurman. 590, 1095 (2003)
- On the Fluctuating Component of the Sun's Large-Scale Magnetic Field. Y.-M. Wang & N. R. Sheeley, Jr. 590, 1111 (2003)

SUN: ATMOSPHERE

- Time-dependent Ionization in Dynamic Solar and Stellar Atmospheres. L. Methods. W. Rammacher & P. Ulmschneider. 589, 988 (2003)
- Two-dimensional Magnetohydrodynamic Models of the Solar Corona: Mass Loss from the Streamer Belt. Eirik Endeve, Egil Leer, & Thomas E. Holzer. 589, 1040 (2003)
- SOHO-Ulysses Spring 2000 Quadrature: Coronal Diagnostic Spectrometer and SUMER Results. S. Parenti, E. Landi, & B. J. I. Bromage. 590, 519 (2003)

SUN: ATMOSPHERIC MOTIONS

Solar and Heliospheric Observatory/Coronal Diagnostic Spectrograph and Ground-based Observations of a Two-Ribbon Flare: Spatially Resolved Signatures of Chromospheric Evaporation. L. Teriaca, A. Falchi, G. Cauzzi, R. Falciani, L. A. Smaldone, & V. Andretta. 588, 596 (2003)

The Observation of Sunspot Light-Bridge Structure and Dynamics. T. E. Berger & S. V. Berdyugina. 589, L117 (2003)

Weak Infrared Molecular Lines Reveal Rapid Outflow in Cool Magnetic Sunspot Penumbral Fibrils. M. J. Penn, W. D. Cao, S. R. Walton, G. A. Chapman, & W. Livingston. 590, L119 (2003)

SUN: CHROMOSPHERE

- Nonequilibrium CO Chemistry in the Solar Atmosphere. A. Asensio Ramos, J. Trujillo Bueno, M. Carlsson, & J. Cernicharo. 588, L61 (2003)
- Correlations on Arcsecond Scales between Chromospheric and Transition Region Emission in Active Regions. B. De Pontieu, T. Tarbell, & R. Erdélyi. 590, 502 (2003)
- The Contribution of Faculae and Network to Long-Term Changes in the Total Solar Irradiance. Stephan R. Walton, Dora G. Preminger, & Gary A. Chapman. 590, 1088 (2003)

SUN: CORONA

- The Nascent Solar Wind: Origin and Acceleration. Luca Teriaca, Giannina Poletto, Marco Romoli, & Doug A. Biesecker. 588, 566 (2003)
- Models of Three-dimensional Flux Ropes. Joachim Birn, Terry G. Forbes, & Karl Schindler. 588, 578 (2003)
- A Three-dimensional Flux Rope Model for Coronal Mass Ejections Based on a Loss of Equilibrium. *Ilia I. Roussev, Terry G. Forbes, Tamas I. Gombosi, Igor V. Sokolov, Darren L. DeZeeuw, & Joachim Birn.* 588, L45 (2003)
- A New Method to Constrain the Iron Abundance from Cooling Delays in Coronal Loops. Markus J. Aschwanden, Carolus J. Schrijver, Amy R. Winebarger, & Harry P. Warren. 588, L49 (2003)
- Rapid Acceleration of a Coronal Mass Ejection in the Low Corona and Implications for Propagation. Peter T. Gallagher, Gareth R. Lawrence, & Brian R. Dennis. 588, L53 (2003)
- Quasi-periodic Pulsations in a Solar Microwave Burst. V. V. Grechnev, S. M. White, & M. R. Kundu. 588, 1163 (2003)
- Sympathetic Coronal Mass Ejections. Y.-J. Moon, G. S. Choe, Haimin Wang, & Y. D. Park. 588, 1176 (2003)
- The Contribution of Polar Plumes to the Fast Solar Wind. A. H. Gabriel, F. Bely-Dubau, & P. Lemaire. 589, 623 (2003)
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- Thermal Conduction in Magnetized Turbulent Gas. Jungyeon Cho, A. Lazarian, Albert Honein, Bernard Knaepen, Stavros Kassinos, & Parviz Moin. 589, L77 (2003)
- A Turbulent Origin for Flocculent Spiral Structure in Galaxies. Bruce G. Elmegreen, Debra Meloy Elmegreen, & Samuel N. Leitner. 590, 271 (2003)
- Images of Astrophysical Masers and Their Variability in a Turbulent Medium: The 25 GHz Methanol Masers. A. M. Sobolev, W. D. Watson, & V. A. Okorokov. 590, 333 (2003)
- Nonlinear Collisionless Perpendicular Diffusion of Charged Particles. W. H. Matthaeus, G. Qin, J. W. Bieber, & G. P. Zank. 590, L53 (2003)
- Spectral Properties of Compressible Magnetohydrodynamic Turbulence from Numerical Simulations. *Jason G. Verstuto, Eve C. Ostriker, & James M. Stone.* 590, 858 (2003)

ULTRAVIOLET: GALAXIES

Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Landsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)

ULTRAVIOLET: GENERAL

- Technique for Detecting Warm-Hot Intergalactic Gas in Quasar Ultraviolet Spectra. Luc Binette, Mario Rodríguez-Martínez, Sinhue Haro-Corzo, & Isidro Ballinas. 590, 58 (2003)
- Accurate Laboratory Wavelengths of the Vacuum Ultraviolet $A(\Upsilon'=3)-X(\Upsilon''=0)$ Band of $^{12}C^{17}O$ and $^{12}C^{18}O$. Christine Steinmann, Erich G. Rohwer, & Herbert Stafast. 590, L123 (2003)

ULTRAVIOLET: ISM

- Optical and Far-Ultraviolet Spectroscopy of Knot D in the Vela Supernova Remnant. Ravi Sankrit, William P. Blair, & John C. Raymond. 589, 242 (2003)
- Surprisingly Little O v1 Emission Arises in the Local Bubble. R. L. Shelton. 589, 261 (2003)
- Nonthermal Chemistry in Diffuse Clouds with Low Molecular Abundances. *J. Zsargó & S. R. Federman.* 589, 319 (2003)
- The Pleiades Reflection Nebula. I. Ultraviolet, Optical, and Far-Infrared Imaging Photometry. Steven J. Gibson & Kenneth H. Nordsieck. 589, 347 (2003)
- Photodestruction of Relevant Interstellar Molecules in Ice Mixtures. Hervé Cottin, Marla H. Moore, & Yves Bénilan. 590, 874 (2003)

ULTRAVIOLET: STARS

- Blue Horizontal-Branch Stars in Old, Metal-rich Stellar Systems. Ruth C. Peterson, Bruce W. Carney, Ben Dorman, Elizabeth M. Green, Wayne Lundsman, James Liebert, Robert W. O'Connell, & Robert T. Rood. 588, 299 (2003)
- A Tale of Two Stars: The Extreme O7 Iaf+ Supergiant AV 83 and the OC7.5 III((f)) Star AV 69. D. John Hillier, T. Lanz, S. R. Heap, I. Hubeny, L. J. Smith, C. J. Evans, D. J. Lennon, & J. C. Bouret. 588, 1039 (2003)
- Far Ultraviolet Spectroscopic Explorer Snapshot Survey of O vi Variability in the Winds of 66 OB-Type Stars. N. Lehner, A. W. Fullerton, D. Massa, K. R. Sembach, & J. Zsargó. 589, 526 (2003)

WAVES

- Gravity Wave–driven Flows in the Solar Tachocline. II. Stationary Flows. Eun-ijn Kim & K. B. MacGregor. 588, 645 (2003)
- Time-dependent Ionization in Dynamic Solar and Stellar Atmospheres. I. Methods. W. Rammacher & P. Ulmschneider. 589, 988 (2003)

X-RAYS: BINARIES

- X-Ray Studies of Two Neutron Stars in 47 Tucanae: Toward Constraints on the Equation of State. C. O. Heinke, J. E. Grindlay, D. A. Lloyd, & P. D. Edmonds. 588, 452 (2003)
- Chandra Observation of the X-Ray Source Population of NGC 6946. S. S. Holt, E. M. Schlegel, U. Hwang, & R. Petre. 588, 792 (2003)
- Role of Shocked Accretion Flows in Regulating the Quasi-Periodic Oscillation of Galactic Black Hole Candidates. *Tapas K. Das.* 588, L89 (2003)
- Extended Emission from Cygnus X-3 Detected with Chandra. W. A. Heindl, J. A. Tomsick, R. Wijnands, & D. M. Smith. 588, L97 (2003)
- The Fe XXII I(11.92 Å)/I(11.77 Å) Density Diagnostic Applied to the Chandra High-Energy Transmission Grating Spectrum of EX Hydrae. Christopher W. Mauche, Duane A. Liedahl, & Kevin B. Fournier. 588, L101 (2003)
- Neutrinos from Accreting Neutron Stars. Luis A. Anchordoqui, Diego F. Torres, Thomas P. McCauley, Gustavo E. Romero, & Felix A. Aharonian. 589, 481 (2003)
- Some Constraints on the Effects of Age and Metallicity on the Low-Mass X-Ray Binary Formation Rate. Arunav Kundu, Thomas J. Maccarone, Stephen E. Zepf, & Thomas H. Puzia. 589, L81 (2003)
- X-Ray Pulses from Accretion Columns: Contributions to the Energy Dependence of the Pulse Shape. U. Kraus, C. Zahn, C. Weth, & H. Ruder. 590, 424 (2003)
- Discrete X-Ray Signatures of a Photoionized Plasma above the Accretion Disk of the Neutron Star EXO 0748-676. M. A. Jimenez-Garate, N. S. Schulz, & H. L. Marshall. 590, 432 (2003)
- A Luminous Recurrent Supersoft X-Ray Source in NGC 300. Albert Kong & R. DiStefano. 590, L13 (2003)
- The 590 Day Long-Term Periodicity of the Microquasar GRS 1915+105.
 A. Rau, J. Greiner, & M. L. McCollough. 590, L37 (2003)
- A Chandra X-Ray Study of the Dense Globular Cluster Terzan 5. C. O. Heinke, P. D. Edmonds, J. E. Grindlay, D. A. Lloyd, H. N. Cohn, & P. M. Lugger. 590, 809 (2003)
- Bowen Flourescence from the Companion Star in X1822-371. J. Casares, D. Steeghs, R. I. Hynes, P. A. Charles, & K. O'Brien. 590, 1041 (2003)

X-RAYS: BURSTS

Eddington-limited X-Ray Bursts as Distance Indicators. I. Systematic Trends and Spherical Symmetry in Bursts from 4U 1728-34. Duncan K. Galloway, Dimitrios Psaltis, Deepto Chakrabarty, & Michael P. Muno. 590, 999 (2003)

X-RAYS: DIFFUSE BACKGROUND

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- The Resolved Fraction of the Cosmic X-Ray Background. A. Moretti, S. Campana, D. Lazzati, & G. Tagliaferri. 588, 696 (2003)
- Measuring Feedback Using the Intergalactic Medium State and Evolution Inferred from the Soft X-Ray Background. *Pengjie Zhang & Ue-Li Pen.* 588, 704 (2003)
- Autocorrelation Function of the Soft X-Ray Background Produced by Warm-Hot Gas in Dark Halos. Xiang-Ping Wu & Yan-Jie Xue. 590, 8 (2003)

X-RAYS: GALAXIES

- Chandra Survey of Radio-quiet, High-Redshift Quasars. Jill Bechtold, Aneta Siemiginowska, Joseph Shields, Bozena Czerny, Agnieszka Janiuk, Fred Hamann, Thomas L. Aldcroft, Martin Elvis, & Adam Dobrzycki. 588, 119 (2003)
- What Types of Jets Does Nature Make? A New Population of Radio Quasars. Paolo Padovani, Eric S. Perlman, Hermine Landt, Paolo Giommi, & Matteo Perri. 588, 128 (2003)
- Diffuse X-Ray Emission from M101. K. D. Kuntz, S. L. Snowden, W. D. Pence, & K. Mukai. 588, 264 (2003)
- Simultaneous Chandra and Rossi X-Ray Timing Explorer Observations of the Nearby Bright Seyfert 2 Galaxy NGC 4945. Chris Done, Greg M. Madejski, Piotr T. Zycki, & Lincoln J. Greenhill. 588, 763 (2003)
- Chandra Observation of the X-Ray Source Population of NGC 6946. S. S. Holt, E. M. Schlegel, U. Hwang, & R. Petre. 588, 792 (2003)
- A Continuous Injection Plasma Model for the X-Ray/Radio Knots in Kiloparsec-Scale Jets of Active Galactic Nuclei. S. Sahayanathan, R. Misra, A. K. Kembhavi, & C. L. Kaul. 588, L77 (2003)
- Chandra Observations of QSO 2237+0305. X. Dai, G. Chartas, E. Agol, M. W. Bautz, & G. P. Garmire. 589, 100 (2003)
- Relativistic and Slowing Down: The Flow in the Hot Spots of Powerful Radio Galaxies and Quasars. *Markos Georganopoulos & Demosthenes Kazanas*. 589, L5 (2003)
- Detection of the "Active" Nucleus of M32. Luis C. Ho, Yuichi Terashima, & James S. Ulvestad. 589, 783 (2003)
- Some Constraints on the Effects of Age and Metallicity on the Low-Mass X-Ray Binary Formation Rate. Arunav Kundu, Thomas J. Maccarone, Stephen E. Zepf, & Thomas H. Puzia. 589, L81 (2003)
- The Nature of the Ultraviolet/X-Ray Absorber in PG 2302+029. Bassem M. Sabra, Fred Hamann, Buell T. Jannuzi, Ian M. George, & Joseph C. Shields. 590, 66 (2003)
- An Active Galactic Nucleus Sample with High X-Ray-to-Optical Flux Ratio from RASS. II. Optical Emission Line Properties of Seyfert 1 Type Active Galactic Nuclei. D. W. Xu, Stefanie Komossa, J. Y. Wei, Y. Qian, & X. Z. Zheng. 590, 73 (2003)
- The Far-Infrared Spectral Energy Distributions of X-Ray-selected Active Galaxies. Joanna K. Kuraszkiewicz, Belinda J. Wilkes, Eric J. Hooper, Kim K. McLeod, Kenneth Wood, Jon Bjorkman, Kisha M. Delain, David H. Hughes, Martin S. Elvis, Chris D. Impey, Carol J. Lonsdale, Matt A. Malkan, Jonathan C. McDowell, & Barbara Whitney. 590, 128 (2003)
- Mass-Temperature Relation of Galaxy Clusters: Implication from the Observed Luminosity-Temperature Relation and X-Ray Temperature Function. Mamoru Shimizu, Tetsu Kitayama, Shin Sasaki, & Tasushi Suto. 590, 197 (2003)
- XMM-Newton Observations of the Perseus Cluster. I. The Temperature and Surface Brightness Structure. E. Churazov, W. Forman, C. Jones, & H. Boehringer. 590, 225 (2003)
- Rapid Cooling of Dusty Gas in Elliptical Galaxies. William G. Mathews & Fabrizio Brighenti. 590, L5 (2003)
- A Luminous Recurrent Supersoft X-Ray Source in NGC 300. Albert Kong & R. DiStefano. 590, L13 (2003)
- A Puzzling X-Ray Source Found in the Chandra Deep Field–South. J. Wang, T. Yaqoob, G. Szokoly, R. Gilli, L. Kewley, V. Mainieri, M. Nonino, P. Rosati, P. Tozzi, W. Zheng, A. Zirm, & C. Norman. 590, L87 (2003)

X-RAYS: GALAXIES: CLUSTERS

- EGRET Upper Limits on the High-Energy Gamma-Ray Emission of Galaxy Clusters. O. Reimer, M. Pohl, P. Sreekumar, & J. R. Mattox. 588, 155 (2003)
- Chandra Discovery of the Intracluster Medium around UM 425 at a Redshift of 1.47. Smita Mathur & Rik J. Williams. 589, L1 (2003)
- Observed Non-Steady State Cooling and the Moderate Cluster Cooling Flow Model. Noam Soker & Laurence P. David. 589, 770 (2003)
- Cosmological Constraints from the Evolution of the Cluster Baryon Mass Function at $z \sim 0.5$. A. Vikhlinin, A. Voevodkin, C. R. Mullis, L. VanSpeybroeck, H. Quintana, B. R. McNamara, I. Gioia, A. Hornstrup, J. P. Henry, W. R. Forman, & C. Jones. 590, 15 (2003)
- High Resolution X-Ray Spectroscopic Constraints on Cooling-Flow Models for Clusters of Galaxies. J. R. Peterson, S. M. Kahn, F. B. S. Paerels, J. S. Kaastra, T. Tamura, J. A. M. Bleeker, C. Ferrigno, & J. G. Jernigan. 590, 207 (2003)

- XMM-Newton Observations of the Perseus Cluster. I. The Temperature and Surface Brightness Structure. E. Churazov, W. Forman, C. Jones, & H. Boehringer. 590, 225 (2003)
- Rapid Cooling of Dusty Gas in Elliptical Galaxies. William G. Mathews & Fabrizio Brighenti. 590, L5 (2003)
- Detection of Nonrandom Galaxy Orientations in X-Ray Subclusters of the Coma Cluster. Manfred Kitzbichler & W. Saurer. 590, L9 (2003)
- Measuring σ₈ with Cluster Lensing: Biases from Unrelaxed Clusters. Graham P. Smith, Alastair C. Edge, Vincent R. Eke, Robert C. Nichol, Ian Smail, & Jean-Paul Kneib. 590, L79 (2003)

X-RAYS: GENERAL

- Lowering Infrared Cluster Magnetic Field Strengths: The Radio Galaxy Contributions. Lawrence Rudnick & Katherine M. Blundell. 588, 143 (2003)
- The Resolved Fraction of the Cosmic X-Ray Background. A. Moretti, S. Campana, D. Lazzati, & G. Tagliaferri. 588, 696 (2003)
- Chandra Observation of the X-Ray Source Population of NGC 6946. S. S. Holt, E. M. Schlegel, U. Hwang, & R. Petre. 588, 792 (2003)
- The Pulsar Wind Nebula in G11.2—0.3. Mallory S.E. Roberts, Cindy R. Tam, Victoria M. Kaspi, Maxim Lyutikov, Gautam Vasisht, Michael Pivovaroff, Eric V. Gotthelf, & Nobuyuki Kawai. 588, 992 (2003)
- A Major Soft Gamma Repeater-like Outburst and Rotation Glitch in the No-longer-so-anomalous X-Ray Pulsar 1E 2259+586. V. M. Kaspi, F. P. Gavriil, P. M. Woods, J. B. Jensen, M. S. E. Roberts, & D. Chakrabarty. 588, 1-93 (2003)
- A Deep Chandra Catalog of X-Ray Point Sources toward the Galactic Center. M. P. Muno, F. K. Baganoff, M. W. Bautz, W. N. Brandt, P. S. Broos, E. D. Feigelson, G. P. Garmire, M. R. Morris, G. R. Ricker, & L. K. Townsley. 589, 225 (2003)
- Refining Chandral ACIS Subpixel Event Repositioning Using a Backsideilluminated CCD Model. Jingqiang Li, Joel H. Kastner, Gregory Y. Prigozhin, & Norbert S. Schulz, 590, 586 (2003)
- Emission-Line Spectra of Ar IX-Ar XVI in the Soft X-Ray Region 20-50 Å.

 J. K. Lepson, P. Beiersdorfer, E. Behar, & S. M. Kahn. 590, 604 (2003)
- Rapid Cooling of Dusty Gas in Elliptical Galaxies. William G. Mathews & Fabrizio Brighenti. 590, L5 (2003)
- Integral and XMM-Newton Observations of the Weak Gamma-Ray Burst GRB 030227. S. Mereghetti, D. Götz, A. Tiengo, V. Beckmann, J. Borkowski, T.J.-L. Courvoisier, A. von Kienlin, V. Schoenfelder, J. P. Roques, L. Bouchet, P. Ubertini, A. Castro-Tirado, F. Lebrun, J. Paul, N. Lund, J. M. Mas-Hesse, W. Hermsen, P. R. den Hartog, & C. Winkler. 590, L73 (2003)

X-RAYS: INDIVIDUAL

Alphanumeric: A0535+26

Neutrinos from Accreting Neutron Stars. Luis A. Anchordoqui, Diego F. Torres, Thomas P. McCauley, Gustavo E. Romero, & Felix A. Aharonian. 589, 481 (2003)

Alphanumeric: EXO 1745-248

A Chandra X-Ray Study of the Dense Globular Cluster Terzan 5. C. O. Heinke, P. D. Edmonds, J. E. Grindlay, D. A. Lloyd, H. N. Cohn, & P. M. Lugger. 590, 809 (2003)

Alphanumeric: GRS 1915+105

The 590 Day Long-Term Periodicity of the Microquasar GRS 1915+105.

A. Rau, J. Greiner, & M. L. McCollough. 590, L37 (2003)

Alphanumeric: 4U 1728-34

Eddington-limited X-Ray Bursts as Distance Indicators. I. Systematic Trends and Spherical Symmetry in Bursts from 4U 1728—34. Duncan K. Galloway, Dimitrios Psaltis, Deepto Chakrabarty, & Michael P. Muno. 590, 999 (2003)

X-RAYS: ISM

- Diffuse X-Ray Emission from M101. K. D. Kuntz, S. L. Snowden, W. D. Pence, & K. Mukai. 588, 264 (2003)
- Chandra Observations of a Nonthermal Supernova Remnant Candidate AX J1843.8—0352 and Its Surroundings. Masaru Ueno, Aya Bamba, Katsuji Koyama, & Ken Ebisawa. 588, 338 (2003)
- XMM-Newton Observations of PSR B1823—13: An Asymmetric Synchrotron Nebula around a Vela-like Pulsar. B. M. Gaensler, N. S. Schulz, V. M. Kaspi, M. J. Pivovaroff, & W. E. Becker. 588, 441 (2003)
- Diffuse Hard X-Ray Sources Discovered with the ASCA Galactic Plane Survey. Aya Bamba, Masaru Ueno, Katsuji Koyama, & Shigeo Yamauchi. 589, 253 (2003)

- Abundance Anomalies in the X-Ray Spectra of Planetary Nebulae NGC 7027 and BD +30° 3639. Holly L. Maness, Saeqa D. Vrtilek, Joel H. Kastner, & Noam Soker. 589, 439 (2003)
- The First Measurement of Cassiopeia A's Forward Shock Expansion Rate. Tracey DeLaney & Lawrence Rudnick. 589, 818 (2003)
- Small-Scale Structure of the SN 1006 Shock with Chandra Observations. Aya Bamba, Ryo Yamazaki, Masaru Ueno, & Katsuji Koyama. 589, 827 (2003)
- Discovery of Radio/X-Ray/Optical Resolved Supernova Remnants in the Center of the Andromeda Galaxy. Albert Kong, L. O. Sjouwerman, B. F. Williams, M. R. Garcia, & J. R. Dickel. 590, L21 (2003)
- The Physics of Supernova Remnant Blast Waves. II. Electron-Ion Equilibration in DEM L71 in the Large Magellanic Cloud. Cara E. Rakowski, Parviz Ghavamian, & John P. Hughes. 590, 846 (2003)
- Nonthermal Emission from the Arches Cluster (G0.121+0.017) and the Origin of γ-Ray Emission from 3EG J1746–2851. F. Yusef-Zadeh, M. Nord, M. Wardle, C. Law, C. Lang, & T. J. W. Lazio. 590, L103 (2003)

X-RAYS: STARS

- An XMM-Newton Observation during the 2000 Outburst of SAX J1808.4—3658. Rudy Wijands. 588, 425 (2003)
- The Optical Counterpart of the Isolated Neutron Star RX J1605.3+3249. D. L. Kaplan, S. R. Kulkarni, & M. H. van Kerkwijk. 588, L33 (2003)
- Transfer of Polarized Radiation in Strongly Magnetized Plasmas and Thermal Emission from Magnetars: Effect of Vacuum Polarization. *Dong Lai & Wynn C. G. Ho.* 588, 962 (2003)
- A New Clue to the Transition Mechanism between Optical High and Low States of the Supersoft X-Ray Source RX J0513.9—6951, Implied from the Recurrent Nova CI Aquilae 2000 Outburst Model. *Izumi Hachisu & Mariko Kato.* 588, 1003 (2003)
- Chandra Observations of the Young Open Cluster NGC 2516. F. Damiani, E. Flaccomio, G. Micela, S. Sciortino, F.R. Harnden, Jr., S.S. Murray, S.J. Wolk, & R.D. Jeffries. 588, 1009 (2003)

- Extended Emission from Cygnus X-3 Detected with Chandra. W. A. Heindl, J. A. Tomsick, R. Wijnands, & D. M. Smith. 588, L97 (2003)
- Search for a Point-Source Counterpart of the Unidentified Gamma-Ray Source TeV J2032+4130 in Cygnus. R. Mukherjee, J. P. Halpern, E. V. Gotthelf, M. Eracleous, & N. Mirabal. 589, 487 (2003)
- Coupling between Periodic and Aperiodic Variability in SAX J1808.4—3658.
 M. T. Menna, L. Burderi, L. Stella, N. Robba, & M. van der Klis. 589, 503 (2003)
- Chandra Observations of Associates of η Carinae. I. Luminosities. Nancy Remage Evans, Frederick D. Seward, Miriam I. Krauss, Takashi Isobe, Joy Nichols, Eric M. Schlegel, & Scott J. Wolk. 589, 509 (2003)
- A Search for Pulsars in Quiescent Soft X-Ray Transients. I. M. Burgay, L. Burderi, A. Possenti, N. D'Amico, R. N. Manchester, A. G. Lyne, F. Camilo, & S. Campana. 589, 902 (2003)
- Separating the X-Ray Emissions of UV Ceti A and B with Chandra. Marc Audard, Manuel Güdel, & Stephen L. Skinner. 589, 983 (2003)
- The Infrared Counterpart to the Anomalous X-Ray Pulsar IRXS J170849-400910. G. L. Israel, S. Covino, R. Perna, R. Mignani, L. Stella, S. Campana, G. Marconi, G. Bono, S. Mereghetti, C. Motch, I. Negueruela, T. Oosterbroek, & L. Angelini. 589, L93 (2003)
- Radiation of Neutron Stars Produced by Superfluid Core. Anatoly A. Svidzinsky. 590, 386 (2003)
- RX J0513.9—6951: The First Example of Accretion Wind Evolution, a Key Evolutionary Process to Type Ia Supernovae. *Izumi Hachisu & Mariko Kato*, 590, 445 (2003)
- The Nearby Neutron Star RX J0720.4—3125 from Radio to X-Rays. D. L. Kaplan, M. H. van Kerkwijk, H. L. Marshall, B. A. Jacoby, S. R. Kulkarni, & D. A. Frail. 590, 1008 (2003)
- The Complete Z-Diagram of LMC X-2. A. P. Smale, J. Homan, & E. Kuulkers. 590, 1035 (2003)
- Bowen Flourescence from the Companion Star in X1822-371. J. Casares, D. Steeghs, R. I. Hynes, P. A. Charles, & K. O'Brien. 590, 1041 (2003)

